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ABSTRACT

This focus paper contains reprints of 11 articles intended to provide an overview of the key issues in the area of adolescent behavior change as it relates to Acquired Immune Deficiency Syndrome (AIDS) and Human Immunodeficiency Virus (HIV) education. Included are: (1) "Preventing HIV Infection and AIDS in Children and Adolescents" (J. Brooks-Gunn, Cherrie B. Boyer, and Karen Hein); (2) "AIDS in Adolescents: Exploring the Challenge" (Karen Hein); (3) "A Theoretical Approach to School-based HIV Prevention" (Diane DeMuth Allensworth and Cynthia Wolford Symons); (4) "A Preliminary Study of Social Issues in AIDS Prevention Among Adolescents" (Michael W. Ross, Chris Caudle, and Julie Taylor); (5) "Adolescent Sexual Behavior" (Jeanne Brooks-Gunn and Frank F. Furstenberg, Jr.); (6) "Self-Efficacy and AIDS Prevention for Pregnant Teens" (Lyn Lawrence, Susan R. Levy, and Laurna Rubinson); (7) "Substance Abuse Prevention Research: Recent Developments and Future Directions" (Gilbert Botvin); (8) "Prevention of Substance Abuse in Children and Adolescents" (George Comerci and Donald Ian MacDonald); (9) "The Efficacy of Peer Leaders in Drug Abuse Prevention" (Knut-Inge Klepp, Andrew Halper, and Cheryl L. Perry); (10) "The Theoretical Concept of At-Risk Adolescents" (Charles E. Irwin, Jr.); and (11) "The Role of Affect and Social Relationships in Health Behavior and School Health Curriculum and Instruction" (Maurice J. Elias). Selected annotated bibliographies, identified by searching the ERIC database, Centers for Disease Control Combined Health Information Database (CHID), MEDLINE database, Psychological Abstracts database, and Sociological Abstracts database, are appended. (LLL)

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ADOLESCENT BEHAVIOR CHANGE: A REVIEW

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ADOLESCENT BEHAVIOR CHANGE: A REVIEW

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Adolescent Behavior Change: A Review

Introduction

In this focus paper we have reprinted eleven articles intended to provide an overview of the key issues in the area of adolescent behavior change as it relates to HIV/AIDS education. Behavior modification theory and strategies can be applied to any behaviors, whether exhibited by adolescents or others. However, while current statistics indicate that there are 72 adolescent AIDS cases in New York State as of July 31, 1990, there are 5,349 AIDS cases between the ages of 20-29.[1] Because of the long latency period of HIV as well as the fact that adolescents may not have met the Centers for Disease Control definition for AIDS, these numbers may not reflect the actual number of HIV infected adolescents. Behaviors which can lead to the spread of HIV infection may have occurred while these young people were still adolescents. Thus, these articles focus upon areas of adolescent behavior which, if modified, will reduce the risk of adolescents becoming infected with HIV.

The first set of articles describe theoretical and practical strategies which have been suggested in the research literature regarding methods of providing adolescent HIV/AIDS education. Hein (1989) describes some of the basic factors which place adolescents at risk for HIV infection. Allensworth (1989) provides an overview of general adolescent behavior change literature, as well as a suggested outline of how to integrate HIV/AIDS education into a comprehensive health education program. Brooks-Gunn (1988) uses a psychological framework to describe strategies which would be useful in an effective AIDS education program. In the last article in this section, Ross (1989) considers some of the social factors which impinge on AIDS education programs.

The next two articles contain an overview of the literature on adolescent sexual behavior. Sexuality is an important area of adolescent development. Current statistics on teenage pregnancy indicate that there were approximately 58,665 reported adolescent pregnancies in New York State in 1987.[2] In addition, there were 10,070 cases of gonorrhea and 926 cases of syphilis among adolescents in New York State in 1989.[3] These data show that adolescents are engaging in sexual behaviors. Since there can be an up to ten year latency period before a person shows symptoms of HIV infection, it may be that many of the young adults who currently are HIV infected became infected in adolescence. Factors which are important influences on teenage sexual behavior include biological perspectives, parental influences, peer influences, academic abilities, and social cognitive abilities. Factors which influence the development of adolescent contraceptive behaviors also are considered by these researchers. These factors include situational determinants, lack of accurate knowledge, and social cognitive factors (i.e. "it can't happen to me"). Prevention strategies which would alter sexual practices among adolescents so as to reduce their risk of pregnancy and/or HIV infection are suggested (Brooks-Gunn, 1989). Factors in sexual behavior which need to be considered include the fact that adolescents do not generally use contraceptives and have a high rate of sexually transmitted diseases. Lawrence (1990) considers the self-efficacy theory of Bandura and applies it to an AIDS/HIV infection prevention program for pregnant teens. Results from this study indicate that it is important to teach teens communications skills in order to increase their feelings of self efficacy and to decrease their risk of HIV infection. Self-efficacy is a construct which measures the likelihood that a behavior will be performed and therefore the risk of HIV infection be diminished.

The next three articles describe programs which have been developed in order to convince adolescents to modify their substance abuse behavior. This section begins with an article by Botvin (1986) which reviews the research related to the prevention of substance abuse in the schools. Two programs in particular are described.

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[1] Personal communication, Susan Hyde, New York State Department of Health, September 14, 1990.

[2] *Child and Adolescent Health Profile: New York State 1987.* Simkin, L., Bubb, S., Noval, L., Medvesky, M., New York State Department of Health, 1989.

[3] Personal communication, Gene Toby, New York State Department of Health, September 18, 1990.

One, the social influence model, is designed to increase adolescents' ability to resist social influences to smoke or drink alcohol. The other model focuses primary attention on the development of an array of cognitive-behavioral personal and social skills. The viewpoint of the medical community is provided in the article by Comerci (1990). Comerci describes a model of adolescent risk taking behavior and considers some of the methods of behavior change which can be used to modify this behavior. In the last article, Klepp (1986) considers peer leadership issues involved in drug abuse prevention. Evaluation of these programs needs to be carefully done in order to provide effective substance abuse education.

The final set of articles provide an overview of some of the key concepts in the health behavior of adolescents. The authors (Irwin, 1990; Elias, 1990) discuss some of the social and physical factors which can influence adolescent health behaviors. Strategies for modifying these behaviors are also considered in these articles.

This paper is intended to serve as a professional resource for health educators. It locates sources of information on adolescent behavior change related to HIV education in one publication. It is not, however, intended to be inclusive of all information in this area. At the end of this paper we have reprinted a series of bibliographies which are intended to lead you to further resources. These bibliographies also serve as a supplemental resource to the bibliographies provided by the authors of each article. For assistance in the development of effective HIV/AIDS education programs in New York State schools, you should contact your AIDS regional training coordinator. The list of AIDS regional training coordinators has been reproduced for your reference on the inside front cover of this document.

The articles in the bibliographies have been identified by searching the EPSIS Health/AIDS database, ERIC database, Centers for Disease Control Combined Health Information database (CHID), MEDLINE database, Psychological Abstracts database, and Sociological Abstracts database. In order to access articles in these bibliographies, you should contact your local library system.

I. THEORETICAL AND PRACTICAL STRATEGIES

Preventing HIV Infection and AIDS in Children and Adolescents
Behavioral Research and Intervention Strategies

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Karen Hein, *Albert Einstein College of Medicine*

Reprinted with permission from *American Psychologist*, Vol 43, No. 11, 958-964, November 1988.

Many of the ideas expressed here were the result of the first author's participation in the National Research Council/National Academy of Sciences Committee on Behavioral and Social Sciences and Education on AIDS Research and of the third author's work supported by the Carnegie Corporation's Council on Adolescent Development. We thank the Carnegie Corporation, the Samuel and May Rudin Foundation, National Institutes of Child Health and Human Development, and the Bureau of Maternal and Child Health for their support and encouragement. Correspondence concerning this article should be addressed to J. Brooks Gunn, Educational Testing Service, Princeton, NJ 08541.

ABSTRACT: This article focuses on pediatric and adolescent AIDS. Literature is reviewed on the incidence of AIDS in various age groups, highlighting differences in demographic patterns among pediatric, adolescent, and adult AIDS cases. Behaviors that increase the likelihood that a child or adolescent will contract AIDS, as well as prevention strategies that target the prevention of human immunodeficiency virus (HIV) infection, are discussed. Finally, recommendations are made for social science research directed toward altering behavior associated with HIV.

Human immunodeficiency virus (HIV) infection and its ultimate expression, acquired immune deficiency syndrome (AIDS), are diseases most often transmitted by the behavior of individuals and exacerbated by institutional constraints and societal beliefs. In this article, we focus on pediatric and adolescent AIDS. Literature is reviewed on the incidence of AIDS in various age groups, highlighting differences in demographic patterns among pediatric, adolescent, and adult AIDS cases. Behaviors that increase the likelihood that a child or adolescent will contract AIDS will be discussed. Following this is a consideration of several prevention strategies that target the prevention of the spread of HIV infection. Finally, recommendations are made for future social science research directed toward altering behavior associated with HIV.

INCIDENCE OF AIDS

As of May 1988, over 60,000 people in the United States had been diagnosed as having AIDS. Although the transmission of pediatric, adolescent, and adult AIDS are all associated with sexual behavior, intravenous (IV) drug use, and blood products, they exhibit different patterns. The vast majority of known AIDS cases are individuals who have acknowledged being homosexual or bisexual men (66%), intravenous (IV) drug users (17%), or both (8%); others have hemophilia or coagulation disorders (1%) or are blood transfusion recipients (2%; Centers for Disease Control, 1987). Heterosexual partners of persons with AIDS represent 4% of all cases (2% of male cases and 28% of female cases). Currently, women represent less than 10% of all cases.

As of May 1988, over 900 children under 13 years of age have been diagnosed as having AIDS. The vast majority (77%) of these pediatric cases contracted AIDS via perinatal transmission, and the rest were associated with transfusions and with hemophilia. Almost three fourths of pediatric AIDS cases are located in New York City, northern New Jersey, and southern Florida, where significant portions of the IV drug users are seropositive (Booth, 1988; Des Jarlais & Friedman, this issue, pp. 865-870; Koshland, 1988). The vast majority of children with AIDS (over 80%) are less than five years of age because of the high percentage of perinatal transmission route and the high mortality rate for these children. Approximately one fifth of children with AIDS are White, one fifth are Hispanic, and over half are Black. In November 1987, one out of 61 babies (1.64%) born in New York City was HIV antibody positive at birth. In the Bronx, one in 43 newborn infants was seropositive, with slightly lower rates in Manhattan and Brooklyn. For the rest of the state, the percent positive was 0.13% (Axelrod, 1987). Of those who are seropositive at birth, approximately 50% have HIV and the remaining

50% have picked up the maternal antibodies but not HIV.

Perinatal transmission of HIV infection may occur via (a) transplacental passage of the virus in utero, (b) exposure to infected maternal blood and vaginal fluids during the labor and delivery of the infant, and (c) breast milk containing the virus (Rogers, 1987, p. 17). At present, the actual number of cases contracted through each of these transmission routes is unknown. It is estimated that between one third and one half of pregnant women with HIV infection will give birth to infected offspring. However, more babies may have a positive HIV antibody test because the mother's antibodies can be transferred to the infant, and these maternal antibodies may then be picked up by the test. Both symptomatic and asymptomatic pregnant women may transmit the HIV infection to the fetus. It is not currently known what factors increase the risk of transmission. Research on the rate of perinatal HIV transmission is hindered by unreliable diagnostic procedures that cannot differentiate between HIV and mothers' antibodies in infants (Koshland, 1988).

It is estimated that over half of the women with AIDS are IV drug users and one fourth are sexual partners of IV drug users (see Mays & Cochran, this issue, pp. 949-957). About 500,000 women in the United States may be IV drug users. As many as 75,000 women IV drug users and 20,000 women whose sexual partners are IV drug users may be infected with HIV (Wofsy, 1987). Almost all of these women are in their childbearing years; because asymptomatic HIV infection does not inhibit fertility, these women are at risk for transmitting the virus. Given the demographic characteristics of IV drug users, non-White women account for a disproportionate percentage of HIV-infected women at this time.

Currently, the number of reported cases of AIDS in adolescents is low (1% of all cases, or 705 adolescents aged 13 to 21 years as of May 1988), but it is doubling each year. Statistics for adolescents have only recently been reported separately from adults. The Centers for Disease Control reviewed AIDS patients aged 11 to 24 years in a 1986 report and 13- to 21-year-olds in 1988. In the 1986 report, 37 cases were 11 to 13 years of age versus 1,122 between 18 and 24 years of age. Of the younger male cases, 80% were transfusion recipients as compared to 4% of the older group. Homosexual or bisexual male patients comprised 18% of the younger group and 79% of the older group. Female patients in both age groups were reported to be mostly infected through sexual contact. In the 1988 report, in which adolescents aged 13 to 21 were compared to adults, a greater proportion of adolescents were female than male (14% vs. 7%); were minority-group members rather than nonminority group members (53% vs. 38%); and were due to heterosexual transmission rather than homosexual acquisition (9% vs. 4%). Heterosexual contact accounted for 46% of adolescent female cases (although the number of cases is small). Young adults in their 20s represent 20% of all reported cases of AIDS. Given the long incubation rate of the virus, it is likely that many of these cases were transmitted during the teenage years (Curran et al., 1988; Stall, Coates, & Hoff, this issue, pp. 878-885). The total number of HIV-infected adolescents is unknown.

Analysis of AIDS cases in New York City is instructive for several reasons. New York accounts for roughly one third of all AIDS cases in the United States and for 20% of reported cases in adolescents 13 to 21 years of age (Hein, 1987; Hein, Vermund, Drucker, & Reuben, 1988). The ratio of male to female adolescent cases in New York City was 2.9:1, compared with 7:1 for New York City adults. Minority groups predominated among both adolescent and adult cases in New York City (unlike the rest of the country, where 60% of cases were White). For both adults and adolescents, male homosexuality and bisexuality and IV drug use were the leading risk behavior categories. However, the percentage of total cases was lower for the homosexual and bisexual category and higher for IV drug abusers in adolescents. Heterosexual transmission was more common among New York City adolescents (15%) than New York City adults (8%) or U.S. adolescents excluding New York City (8%). Most alarming, however, was the distribution of cases when female and male adolescent cases were separated. Although the total numbers are still small (28 in New York City and 60 in the rest of the United States), heterosexual spread accounted for 46% of U.S. adolescent female cases (excluding New York City) and 52% of adolescent female cases in New York City.

BEHAVIORAL FACTORS ASSOCIATED WITH HIV INFECTION

Sexual Behavior

The majority of today's teenagers in the United States have had intercourse. In a 1983 national survey, 60% of White male teens have sexual intercourse by age 18 years and 60% of White female teens by age 19 years. Of Blacks, 60% of the male teens had intercourse by age 16 and 60% of female teens by age 18 (Hofferth & Hayes, 1987). We do not have much information on aspects of sexual behavior other than vaginal intercourse, such as information on percentages of teenage girls who have had intercourse only once, frequency of intercourse, number of partners, and whether individuals were in a relationship with their first partner. All of these indicators would be helpful in estimating the possible spread of HIV infection in adolescence (Brooks-Gunn & Furstenberg, in press). Information on number of partners is especially important. In a survey of students' sexuality in late adolescence, Sorenson (1973) identified two types of individuals—the serial monogamous individual and the sexual adventurer (who, in the month preceding the interview, had an average of 3.2 sexual partners; this group comprised 41% of the sexually experienced male adolescents and about 13% of the female adolescents). A more recent national survey identified 39% of male and 17% of female unmarried young adults (18 to 24 years of age) as having had three or more partners in the last year (*Los Angeles Times*, 1987; see Turner & Martin, 1985, for discussion of bias in such surveys). Such young people may be at risk for HIV infection.

We have little information about how many male adolescents identify themselves as homosexual or have had same-sex experiences (Remafedi, 1987). However, over 10% of all adolescent males probably have had some same-sex experiences.

Sexually Transmitted Diseases in Adolescence

A look at the incidence and prevalence of sexually transmitted diseases among adolescents may be one way to trace disease patterns that might be applicable to HIV infection. When national data on the prevalence of various sexually transmitted diseases are graphed, using the percentage of sexually active individuals as the denominator for each age group, the highest rate of gonorrhea, syphilis, cytomegalovirus (CMV), chlamydial cervicitis, and rates of hospitalization for pelvic inflammatory disease are found among 15- to 19-year-olds (Bell & Hein, 1984). Risk factors for sexually transmitted diseases include early age of intercourse and no or irregular contraceptive use. Adolescent girls may be at greater risk than adult women for the complications of some sexually transmitted diseases, and, by analogy, possibly AIDS, because of anatomic and physiological differences (Hein, 1987). Biochemical differences in the developing female in whom menstrual patterns and vaginal, ovarian, and cervical function are incompletely developed may account for the higher complication rates.

Contraceptive Use

About one half of all teenagers do not use contraceptives the first time they have sexual relations (Zelnik & Shah, 1983). Of those who used contraception, male methods (condoms and withdrawal) seem to be the overwhelming choice, as reported by most male and female teenagers, both Black and White. Two thirds to three fourths of all White teenagers and Black teenage boys and 45% of Black teenage girls reported using male methods (Zelnik & Shah, 1983). The fact that male methods are frequently used by those teenagers who do use contraceptives during their first intercourse has relevance for the transmission of HIV infection. Condoms act as a barrier against the spread of HIV infection (although it is not known what the failure rate is for HIV infection with condoms). Unfortunately, the fact that perhaps as many as one half of all teenagers do not use contraception the first time they have intercourse is not a "one-time" event. Young adolescents are more likely than other adolescents to delay use of contraception more than 12 months after first intercourse. The only group initiating contraceptive use within the first or second month in large numbers are White teens aged 18 and 19 years (Hofferth & Hayes, 1987). In general, ignorance about the contraceptive choices available and their effectiveness is common, particularly among those who begin sexual activity at an early age and those who are economically disadvantaged. Irregular contraceptive use is also associated with poor communication with parents, lack of knowledge of parental contraceptive experience, having friends who become parents, low educational achievements and aspirations, high levels of anxiety, low self-esteem, and feelings of fatalism, powerlessness, and alienation (Brooks-Gunn & Furstenberg, in press; Lancaster & Hamburg, 1986; Morrison, 1985).

Risk-Taking Behavior

Early teenage sexuality is generally associated with alcohol and drug use, as well as declines in school achievement and interest (Jessor & Jessor, 1977). This constellation of behavior has been subsumed under the rubric of risk taking. Adolescents who hav engaged in early sexuality, who have multiple partners, who use IV drugs, or who associate with IV drug users may be most at risk for AIDS. Prevalence estimates for such subgroups would be extremely valuable.

Young adolescents also may engage in risky behaviors because of developmental limitations in cognitive and social cognitive abilities. For example, young adolescents' thinking is typically concrete, egocentric, and not particularly future-oriented. The abilities to consider the future, to anticipate consequences and decisions, and to integrate specific knowledge into coherent systems all increase during adolescence (Damon & Hart, 1982; Harter, 1983; Selman, 1980). For example, not all young adolescents have formal operational understanding of "where babies come from" (Bernstein & Cowan, 1975). Social cognitive processes that may have relevance to understanding and altering teenage sexual behavior include self-efficacy and social comparisons (Bandura, 1986; Higgins, Ruble, & Hartup, 1983). Whether such types of reasoning abilities are associated with sexual behavior has not been studied. However, the fact that the majority of Black teenage boys have initiated intercourse by age 15 suggests that developmental differences in reasoning ability in younger and older adolescents should be taken into account when considering risk-taking behaviors and strategies for preventing it.

Drug-Related Behavior

Sharing needles is one method of transmitting HIV infection. In 1986 approximately 10% of high school seniors had used cocaine in the past year, 4% were currently using cocaine, and 1% had used heroin (Johnston, Bachman, & O'Malley, 1987). However, this national survey underestimates the use of drugs by American youth, given that in areas of high HIV prevalence, specifically inner-city neighborhoods, the high school dropout rate can be as high as 40%. Because dropping out of school is associated with drug use and early sexual behavior, higher rates of drug use and of sexual contact with drug users may be seen in dropouts than in high school seniors.

Prevalence of drug use among all teenagers is not known. Similarly, the percentages of cocaine and crack users that inject intravenously (an increasingly common occurrence) or that use heroin are not known (but is estimated to be more than 200,000). Even if teenagers are not injecting cocaine, they may come into sexual contact with older drug abusers who are injecting heroin or cocaine or have done so in the past. In some inner-city populations, 15% of all adolescent males have used heroin, with the percentages perhaps being even higher for cocaine and crack (Brunswick & Messeri, 1986). In cities where needle sharing is common, such as Newark, Miami, and New York City, over one half of all individuals who inject drugs intravenously may be seropositive (Booth, 1988; Des Jarlais, Friedman, & Hopkins, 1985). Not only are IV drug users at high risk, but they are most likely to be the "bridge of HIV infection" into the heterosexual population. This is true for adolescents as well as adults.

Adolescents' Knowledge, Attitudes, and Beliefs

Adolescents' health beliefs are likely to announce responses to the AIDS epidemic. Adolescents' degree of motivation for change, their perception of risk and the value of taking action, and their actual reduction of risky behavior must be studied. In general, adolescents define illness as the absence of disease, not in terms of well-being or prevention. Therefore, the idea of being an asymptomatic carrier of a deadly disease may be a particularly hard one for adolescents to accept for themselves or for others.

More specifically with respect to AIDS, several surveys of teenagers' knowledge, attitudes, and beliefs about AIDS and HIV infection have been published or are underway (DiClemente, Boyer, & Morales, 1988; DiClemente, Zorn, & Temoshok, 1986; Kegeles, Adler, & Irwin, 1988; Price, Desmond, & Kukulka, 1985; Reuben, Hein, & Drucker, 1988; Strunin & Hingson, 1987). Studies differ as to populations (suburban vs. urban, Black vs. White) and data collection methods (telephone surveys, structured interviews, self-administered questionnaire).

Only a small percentage of teenagers, as of 1987, had received formal instruction about AIDS in school, although the vast majority desired more information at school (DiClemente et al., 1986). Most adolescents know that sexual intercourse and sharing needles are major routes of acquiring HIV infection. However, significantly fewer adolescents are aware that using condoms reduces risk of disease transmission; misconceptions about casual contagion of AIDS are prevalent among adolescents (DiClemente et al., 1986; Reuben et al., 1988). For example, more than a third of 1,326 students in San Francisco incorrectly believe AIDS is contracted by shaking hands or being near someone with AIDS. Many adolescents think that one could "tell" who was likely to be infected.

Although some teenagers report changes in casual behavior (e.g., "avoid gays") because of fear of AIDS, few reported changes in most sexual behaviors that actually transmit the virus (10% used condoms, 10% abstained from sex; Strunin & Hingson, 1987). In San Francisco, White adolescent high school students are more knowledgeable than Black and Hispanic adolescents about HIV transmission and prevention (DiClemente et al., 1988). Perceived risk for contracting AIDS is greater among students with less knowledge (DiClemente et al., 1988). In a study in New York City, most adolescents engaging in the highest risk sexual behavior perceived themselves to be at low risk and did not use precautionary measures during sexual intercourse (Reuben et al., 1988). Harboring many misconceptions about HIV transmission is associated with high levels of anxiety about personal susceptibility to HIV infection (DiClemente et al., 1988). Thus, fear-reduction messages, rather than fear-arousal messages, and realistic assessments of risk and information on how to change behavior may be effective ways to transmit information.

STRATEGIES FOR PREVENTING HIV TRANSMISSION

Preventive strategies must focus on altering the sexual and drug behavior of women in their childbearing years (pediatric AIDS) and of teenagers (adolescent AIDS). Several general types of intervention strategies dealing with sexual behavior should be initiated. These include education in the schools, school-based clinics, community education, media campaigns, condom distribution programs, court-related facilities, and family planning clinics. Other approaches proposed include more specific strategies based on social-psychological principles. These include decision making, peer counseling, peer resistance training, behavior-skills training, self-"inoculation," attitude change, and decreases in risk-taking behavior more generally (Bandura, 1986; Botvin, 1986; Eisen, Zellman, & McAlister, 1985; Flay, 1985). Systematic applications of such approaches to sexual behavior, use of contraceptives, or more generally preventing AIDS are rare. Strategies to alter IV drug use for adults are outlined by Des Jarlais and Friedman (this issue, pp. 865-870), and cognitive-social learning perspectives to promote adolescent health behavior are considered by Flora and Thoresen (this issue, pp. 965-970).

Although treatment is not our focus, it is important to remember that AIDS affects families as well as individuals. Chronic medical illness in a child affects parents and siblings and constitutes a major negative life event (Grave & Pless, 1976; Pless, Roghmann, & Haggerty, 1972). Problem behavior, feelings of being excluded, and feelings of grief and loss all may accompany the diagnosis of a sibling as having AIDS. More research is needed on the long-term effects of a death of a sibling on children, adolescents, and adults. Children and adolescents also are at risk for losing their parents to AIDS. The death of a parent is one of the most potent factors in predicting maladaptive outcome, or what has been termed the vulnerable child (Garmezy & Rutter, 1983; Rutter, 1987).

AIDS Education in the Schools

In 1987, 94% of all parents indicated that they wanted to have education about HIV transmission in the schools (Meade, 1988). Over half of the large urban school districts in the country have initiated AIDS education, although current programs tend to be short and nonspecific. Programs need to take into account the developmental differences in understanding of HIV transmission in elementary school, middle school, and senior high school students, as well as community concerns about the "appropriateness" of information to be given to children and, perhaps, differences in program content as a function of the degree of risk in a certain school district or neighborhood.

In terms of content, it has been proposed that education begin in elementary school, with the focus on the role of blood products in transmitting the disease. In junior high school, sexual transmission would be included in the curriculum. In high school, more information on sexual transmission would be added, including topics such as transmission by same-sex acts as well as heterosexual acts, effectiveness of contraceptive methods, skills training in the use of contraceptives, and decision making in terms of whether to have sexual intercourse and with whom (see Centers for Disease Control, 1988, and DiClemente, Boyer, & Mills, 1987, for more detailed information).

More general sex education is currently offered by three fourths of our school districts (Kirby, 1984). However, the timing, extensiveness, and intensiveness of sex education programs are widely divergent. Almost no school districts include decision making about sexuality as a goal of their sex education program. Three fourths include reproductive knowledge and a scant one fourth include reduction of sexual activity and teenage childbearing as goals. Most programs are short (10 hours or less), and perhaps less than 10% of all students have taken comprehensive programs (40 hours or more; Kirby, 1984). Elementary school programs seem to be rare, although pubertal education is provided in fifth and sixth grade (however, no systematic review of these programs exists). Junior high school programs focus on puberty, reproduction, and dating, but typically not on contraception. High school coverage is more inclusive; three fourths of all programs include family planning, contraceptive methods, and abortion, and one half include masturbation and homosexuality as topics (Hofferth & Hayes, 1987). Generally, knowledge about reproduction increases after such programs, especially in younger adolescents. Of more interest is whether programs alter behavior. The fear that sex education would promote early sexuality is largely unfounded (Furstenberg, Moore, & Peterson, 1986). Such programs may promote contraceptive use in sexually active teens, although many more systematic evaluations are needed.

Another school-based approach involves school-based clinics or health clinics adjacent to schools, many of which have been initiated in the 1980s. Some program evaluations show encouraging results in terms of reduction of pregnancy rates and, in one program, delay of first intercourse (Zabin, Hirsch, Smith, Strett, & Hardy, 1986). However, results are not uniform across programs. More effort could be directed toward bringing male students into these clinics and toward promoting condom use in these clinics.

Television

Even though public health service messages on condom use to prevent AIDS were aired in 1988, executives at all three major television networks state that they would turn down identical advertising by condom manufacturers. However, a random survey of 187 local television and 445 radio stations found that one in five accepted condom ads. Two thirds of the local television stations plan to do so in the future. However, reluctance to promote condom use is still seen, perhaps because of the continuing ambivalence about openly discussing teenage sexuality (Holden, 1987; Osborne, 1988).

Family Planning Services and Condom Distribution

Approximately one half of all teenage girls who obtain contraceptive service do so by family planning clinics, with the other half using private physicians (Pratt & Hendershot, 1984). Problems relevant to the AIDS epidemic involve the fact that male methods are typically not prescribed and little effort is directed toward bringing male teens into the system (see current initiatives by the National Urban League and Children's Defense Fund to enhance male participation). Just as condom distribution programs were initiated earlier in this century to stop the transmission of syphilis (Brandt, 1987), community distribution programs are now being initiated for the prevention of AIDS, although few of these programs have been evaluated.

RECOMMENDATIONS

It is evident that the psychological, biological, and social differences between children, adolescents, and adults must be the basis for setting a research agenda for HIV infection and AIDS. Research studies on demographic trends, changes of puberty, sexual behavior, and drug use are urgently needed, as are carefully designed and evaluated programs.

Demographic studies must be conducted to invesitgate the rate of reported cases and changes over time, sex ratio, racial and ethnic distribution, age differences, regional differences, and associated risk-related behaviors for infection. The relation of patterns or rates of other sexually transmitted diseases to HIV should be investigated as a possible yardstick for future patterns of the spread of HIV within adolescent and pregnant women subgroups. Given that puberty is a time marked by dramatic changes in body size, organ function, and physiologic alterations (Brooks-Gunn & Petersen, 1983; Grumbach & Sizonenko, 1986), research needs to address the effect of HIV infection on adolescent growth and the effect of pubertal changes on the nature and course of HIV infection.

Particular specific research omissions on sexual behavior include (a) frequency of behaviors other than intercourse and variations in type and frequency of sexual behavior by gender, ethnicity, age, social class, and sex of partner; (b) pubertal education aimed at male students on topics such as ejaculation and condom use (many young boys today still learn about ejaculation from magazines, locker room jokes, or their first nocturnal emission; Gaddis & Brooks-Gunn, 1985); (c) same-sex preferences and behavior; (d) relation of sexual behavior to other adolescent behavior and events; (e) differences between younger and older adolescents in all of the above; and (f) comparisons of fertility regulation and the onset of sexuality in other cultures. With regard to drug use, we have very little information on patterns of IV drug use among teenagers, especially among those who have dropped out of school, the antecedents of IV drug use, initiation of teenagers into needle-sharing networks, co-occurrence of unprotected sexual intercourse and IV drug use, teenage prostitution and its association with drug use and IV drug users (especially trading of sex for drugs), and teenage runaways. Much more needs to be learned about beliefs and knowledge about HIV transmission, especially in adolescents who engage in risk behaviors or associate with groups with high seropositivity rates, such as IV drugs users on the East coast.

Research on teenage contraceptive use needs to concentrate on male beliefs and attitudes underlying contraceptive use; reasons for use (as well as misuse and nonuse) of contraceptives, such as lack of knowledge about contraceptives, beliefs about pregnancy and AIDS risk, and misperceptions about transmission; changes in knowledge about the role of reproduction in HIV transmission from childhood to adolescence; and developmental changes in social cognition such as self-definitions, risk taking, decision making, and anticipation of future changes as they relate to sexual behavior and contraceptive use.

In addition to a focus on behaviors and beliefs associated with HIV transmission, social scientists may contribute to the design and evaluation of interventions aimed at altering teenagers' and pregnant women's behaviors, specifically those having to do with contraceptive use and IV drug use. Interventions targeted toward specific groups and using "tried and true" behavioral principles need to be implemented (Becker & Joseph, 1988). Although school-based interventions are critical, we need to go beyond the classroom to serve hard-to-reach teenagers (prostitutes, runaways, school dropouts, drug users, incarcerated youth). In addition, most efforts at encouraging contraceptive use focus on teenage girls; we must initiate and evaluate programs to increase male condom use (condom distribution initiatives, family planning clinic services, school-based clinics). At the same time, program initiatives must be evaluated. The efficacy of many, if not most, of the programs aimed at reducing the teenage fertility rate has not been tested, making it difficult to make policy and program recommendations (Furstenberg, Brooks-Gunn, & Chase-Lansdale, in press; Hayes, 1987). At present, the plethora of AIDS-related programs and materials being introduced into the schools are not being evaluated, making it likely that we will have little idea of what is effective and what is not, similar to the experience of teenage fertility programs.

Briefly stated, the differences between children and adolescents with AIDS are that the route of infection in young children is usually vertical from an infected mother and that the mean survival time is shorter in children. Some of the differences between adolescents and adults are that a higher percentage of teenagers with AIDS acquired it by heterosexual transmission, are asymptomatic (but will become symptomatic during adulthood), and are Black and Hispanic. Also, pediatric and adolescent AIDS may be characterized by a special set of ethical and legal issues regarding testing and informing partners and parents for those adolescents below the age of majority, cognitive differences in processing information, the special medical, economic, and social implications of teenage mothers delivering HIV-infected babies, emotional differences in coping with threatening situations, the lack of a unified community for support (as opposed to the homosexual adult population), differences in sexual behavior patterns (a higher percentage of sexual adventurers, less use and availability of contraceptives), and the lack of availability of services that are convenient and attractive to youth.

Certain adolescents constitute a group that form a bridge from those currently infected into the larger group of adolescents. This bridge group is a "high-risk" population in the behavioral sense. The definition of risk is shifting from the notion of "high-risk groups" toward "persons who engage in high-risk behaviors."

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AIDS in Adolescence: Exploring the Challenge

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EXECUTIVE SUMMARY

As we approach the end of the first decade of the AIDS epidemic, it is apparent that there are special considerations for the adolescent population. Both of the epidemics, AIDS and "AFR-AIDS," have touched the lives of most adolescents.

Currently, there is a low cumulative prevalence of AIDS cases in the adolescent population under the age of 21 compared to adults. At the end of 1988, 997 adolescent AIDS cases in persons aged 13-21 years were reported to the Centers for Disease Control, accounting for 1% of the total reported cases. However, the mean latency time from viral infection to time of illness is estimated to be 5-7 years. Therefore, most infected adolescents would not become ill until they are young adults. The percent of reported cases in people 20-29 years of age is 21% of total cases. While adolescent sexual behavior is a common and controversial concern, we are only beginning to recognize the AIDS risk associated with this behavior. In fact, exploring the AIDS risk in adolescents forces us to focus on the special characteristics of this age group and the need for an interdisciplinary perspective.

The premise of this report is that certain subgroups of adolescents form bridges from those adults currently infected to a larger group of adolescents. As the virus spreads from individuals initially infected (homosexuals, blood-product recipients, and IV drug users) to their partners and beyond, the risk-related behaviors of adolescents puts some teenagers directly in the path of the epidemic. In this epidemic, geography can be destiny.

The major differences between children, adolescents, and adults are highlighted. Briefly stated, the differences between affected children and adolescents are that the route of infection in young children is usually vertical from an infected mother, there is a shorter mean survival time in young children, and there is a need for day care and foster care for preschool aged infected children.

Some of the differences between adolescents and adults are that a higher percent of teenage AIDS cases are acquired by heterosexual transmission, there is a higher percent of teenaged asymptomatic individuals (who will become symptomatic during adulthood), a higher percent of black and Hispanic cases, a special set of ethical and legal issues regarding testing and informing partners and parents for those adolescents below the age of majority, cognitive differences in processing information, the special medical, economic, and social implications of teenaged mothers delivering HIV-infected babies, emotional differences in coping styles, the lack of unified community for

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support (as opposed to the homosexual adult populations), differences in sexual behavior patterns (a higher percent of "sexual adventurers," less use and availability of contraceptives), and the lack of availability of services that are convenient, appropriate, and attractive to youth. Specific biologic, behavioral, and social attributes of adolescents point to the need for a different approach to organizing educational interventions and health services for teenagers.

This approach should be based on a conceptual framework that establishes the relative risk among various adolescent subgroups. Even though the exact dimensions of each risk group are unknown, there are specific issues for each subgroup of teenagers. The model proposed later in this article provides a systematic way of separating groups of teenagers for different types of interventions.

AIDS EPIDEMIC UPDATE

By reviewing the most recent data on the AIDS epidemic, the relationship between the actual and the potential situation emerges. Although over 83,000 people have been diagnosed as having AIDS as of January 1989, 1.5 million are probably infected with HIV. Recent reports from the Centers for Disease Control (CDC) based on a review of all studies of rates of infection as of October 1987 confirmed the earlier 1986 Public Health Service projections. Although AIDS has been confined mainly to large coastal cities, there is evidence of geographic spread in that all states have now reported cases. AIDS cases are 93% male, but women, particularly young minority women, are increasingly expected to be carriers of the virus.

Although the percentage of total AIDS cases currently attributed to heterosexual transmission is small (4%), recent studies of HIV seroprevalence in AIDS epicenters like New York City point to high rates of HIV maternal antibodies in newborns. Further evidence of more widespread heterosexual transmission is the male to female ratio. The overall ratio in U.S. adults is 15:1. In the military, the overall ratio is 3:1, but for adolescent recruits less than 20 years old, the male:female ratio was 0.5:1. Among New York City adolescent AIDS cases, the ratio is 2.9:1. In one central African city where the male:female AIDS ratio is 1:1, teenage girls aged 15-19 have the highest rates of seropositivity (positive blood tests indicating presence of the virus). Their most likely route of infection is heterosexual contact with older men. This age difference is a pattern of behavior commonly reported by American adolescent females who tend to have male partners several years older.

Prevalence of HIV in military recruits and Job Corps participants underscore the presence of the virus among young adults, particularly blacks and Hispanics. At a time when the prevalence of HIV infection among most adolescent subgroups is unknown, analyses of AIDS cases provide some insight into the profile of the epidemic as it extends into the adolescent population. Two analyses of adolescent AIDS cases have been reported. The CDC analyzed 1159 cases in persons aged between 11 and 24 years in 1986 and 614 cases in those aged 13-21 years in 1988. The majority of cases were in the older age group (18-24 years), however it was noteworthy that 80% of the younger males (11-17 years) were people with hemophilia.

A more recent analysis in 1988 of 111 cases in those aged 13-21 years old in New York City reveals trends in viral spread in one epicenter where 20% of all reported adolescent AIDS cases in the United States reside. The majority (58%) were black and Hispanic males. A much lower percentage were homosexual/bisexual (44%) as compared to adults (66%), while a higher percent were IV drug abusers (21%) or female partners of these two groups (15%). Only 11% of the New York City adolescent cases were transfusion recipients (mostly hemophiliacs) as compared to 80% of younger adolescent males in the rest of the nation. Heterosexual spread among adolescents appears to be more common as a reported risk behavior in New York teenagers than in the rest of the nation in that 45% of female cases aged 13-21 were via heterosexual spread. Another indication of viral spread to adolescents is the fact that 10% of the mothers of babies born with AIDS in New York City are young women under 21 years of age.

A recent seroprevalence survey conducted in November 1987 of 25,000 newborns in New York State revealed an alarmingly high rate of HIV antibodies. One out of every 61 infants born in New York City had positive antibodies. In the Bronx, it was one out of every 43. These rates give some indication of the very high rates of infection among sexually active adults in their childbearing years. Analysis of trend data indicate a lowering in the age groups over time in those areas where intravenous drug abuse is a major associated risk behavior. These data add to the increasing evidence that minority women living in areas of concentration of poverty are now directly in the path of the epidemic.

Although the total number of adolescent cases is small, nonetheless, the means of acquisition points to a very different pattern than is present in adults or the nation as a whole. This emerging pattern is particularly alarming because much of the publicity in the printed and electronic media has been geared to attracting the attention of (and in some cases reassuring) middle and upper class white adults rather than trying to reach inner-city minority youths.

Two factors are particularly worrisome about the incidence of "hidden" AIDS risk among adolescents. 1) The low percentage of AIDS cases in adolescents reflects the cumulative, not the current pattern of infection. Analysis of the most recent data from New York City underscores the fact that heterosexual transmission among inner-city minority youth is a clear and present danger. It is difficult to get an accurate sense of HIV prevalence in the adolescent population because few high-risk adolescents have been tested as yet. 2) Due to the long latency from infection to disease, asymptomatic HIV infection in adolescents is likely to present as illness (AIDS- or HIV-related illness) in young adults. Preliminary data from studies of HIV-infected adolescents with hemophilia indicate that adolescents remain asymptomatic longer than adults. Yet the risk of an HIV-infected teenager developing AIDS does not decrease over time, and the virus can be transmitted while the adolescent remains asymptomatic.

A MULTIDISCIPLINARY PERSPECTIVE

There are many facets to the relationship of AIDS and adolescents. Therefore, a multidisciplinary perspective is necessary. The closest parallel we have in the adolescent population is the incidence and prevalence of sexually transmitted disease, which, if examined, sends out a clear warning. National data on sexually transmitted diseases can be misleading if rates are calculated based upon overall population at a given age. For example, it appears that adolescents, particularly young adolescent females 10-14 years of age, have lower rates of gonorrhea than young adults. If, however, the rates are recalculated based only on the percentage of sexually active adolescents and adults in each age group, teenagers have the highest rates of all, twice as high as young adults in their 20s. These high rates may be related to physiologic risk factors. Differences in adolescent reproductive organ function and immunologic status due to changing levels of sex hormones may play a role in the increased acquisition and more rapid spread of some venereal diseases.

Behavioral issues include patterns of sexual behavior and drug-related behavior. Intravenous drug use or blood product transfusions are obvious risk factors. HIV, is assumed to be spread by needles in the drug abusers or blood products in the people with hemophilia, but infected drug users are mainly young adult minority men who are also sexually active, some with multiple partners. Similarly, many adolescent hemophiliacs are sexually active and can transmit the virus to their sexual partners.

Sexual behavior has direct relevance for AIDS transmission. Important factors include the age at first intercourse, and patterns of intercourse, whether serially monogamous or sexually adventurous. Finally, the use of contraceptives and the rate of teenage pregnancies are important factors. Adolescent females tend to have intercourse with somewhat older males. Pregnant teenagers can transmit HIV infection to their children.

Psychologic development varies greatly during the adolescent years, but certain characteristics appear to be common to the adolescent population. Teenagers tend to feel invulnerable, making a future risk of AIDS appear remote. This is compounded by the tendency toward "concrete" rather than "abstract" thinking still prevalent among adolescents. Decisions are thus based on very tangible factors rather than on long-term probabilities. Peer pressure is an immediate and important factor that can override abstract and distant risks. The tendency toward denial, shared by all age groups, may be exaggerated in adolescence.

Ethical and legal considerations related to testing, screening, informing partners, and counseling are complex when dealing with adults. The principles and guidelines need modification when applied to minors. Some specific questions are raised in this report to highlight the unique circumstances for adolescents who are under the age of majority.

Economic issues have been analyzed for adults with AIDS. However, the cost of identifying and caring for adolescents calls for a different type of analysis that goes beyond the direct costs of testing and patient care. Outpatient and in-patient insurance coverage for adolescents, particularly those who are not in school who are from "working poor" families is problematic. The greatest demand will probably be for ambulatory care. The usual barriers keeping adolescents from obtaining care (payment, consent, and confidentiality) are particularly relevant in relation to HIV infection. In addition, the indirect costs to society related to services developed and to loss in productivity must be considered.

Adolescents spend most of their day time in institutions organized for them by adults. Political debates are currently raging about the appropriate role of youth-serving institutions in altering behavior, offering health services, or expanding sex education curricula. Adolescent views, beliefs, and specific concerns about AIDS have only recently been polled or considered. Institutions that have been involved in adolescent AIDS controversies include schools and federal programs including the Job Corps and the military. The impact of policy decisions about testing and exclusion of HIV-positive adolescent recruits has not been systematically studied. Yet anecdotal reports indicate severe disruption in the lives of HIV-positive adolescents and their families with inadequate mechanisms for appropriate counseling and following up of high-risk or HIV-positive adolescents.

Responses to the challenge should be based on three assumptions: 1) adolescents are a heterogeneous population socioeconomically, culturally, and developmentally; 2) to be effective, prevention must take place before widespread HIV infection in the adolescent population is detected by the presence of numerous cases of AIDS; and 3) interventions must both include and go beyond traditional institutions.

The basic message in this report is recognition of the special needs and opportunities related to AIDS in adolescence. Thoughtful but quick action is the goal. If we cannot determine and deter the AIDS risk for our adolescents now, we are likely to face massive morbidity and mortality among our young adults in the near future.

Introduction

The AIDS epidemic has become a focal point of national and international debate. Much of this debate has focused on speculation about the extent of spread to the heterosexual population. The two sides of the controversy are encapsulated in the following two quotations:

> . . . fears that it is spreading into the heterosexual population are just that, fears. There is no clear evidence that AIDS in the United States has yet spread beyond the known risk groups, notably homosexuals and drug addicts. There is some reason to suppose it will stay confined to these groups for the foreseeable future. New York Times, February 4, 1987 (1)

> If we can't make progress, we face the dreadful prospect of a worldwide death toll in the tens of millions a decade from now. Dr. Otis R. Bowen, quoted in New York Times, January 30, 1987 (2)

American adolescents do not currently constitute a group with high morbidity or mortality from HIV infection. Of the roughly 40 million adolescents aged 13-21 years of age, over 900 have been identified as having AIDS as of January 1989, although the prevalence of HIV infection is unknown. However, many aspects of the lifestyles of American adolescents may place them directly in the path of the epidemic. In the absence of accurate information about the extent of HIV infection in asymptomatic individuals, risk status must be inferred from data collected for other purposes.

Differences Between Children, Adolescents, and Adults

Although the HIV does not select people by age, nonetheless, there are differences between children, adolescents, and adults that have bearing on the AIDS epidemic. Some of these differences are biologic, others are behavioral or sociologic. Briefly stated, the differences between affected children and adolescents are the route of infection in young children is usually vertical from an infected mother, there is a shorter mean survival time in young children, and there is a need for day care and foster care for infected pre-school aged children.

Some of the differences between adolescents and adults are a higher percent of teenage cases acquired by heterosexual transmission, a higher percent of teenaged asymptomatic individuals (who will become symptomatic during adulthood), a higher percent of black and Hispanic cases, a special set of ethical and legal issues regarding testing and informing partners and parents for those adolescents below the age of majority, cognitive differences in a processes information, the special medical, economic, and social implications of teenaged mothers delivering HIV-infected babies, emotional differences in coping with threatening situations, the lack of a unified community for support (as opposed to the homosexual adult population), differences in sexual behavior patterns (a higher percent of sexual adventurers, less use and availability of contraceptives), and the lack of availability of services that are convenient and attractive to youth.

Certain adolescents constitute a group that form a bridge from those currently infected into the larger group of adolescents. This bridge group is a "high-risk" population in the behavioral sense. The definition of risk is shifting from the notion of high-risk groups toward "persons who engage in high risk behaviors" (3).

The proposed conceptual framework in the next section provides a description of a hierarchy of adolescents at varying degree of risk for acquisition of HIV infection. Some are at immediate risk (adolescent homosexual, bisexual, and IV drug users and their immediate partners plus adolescents having sex with adults in these categories). Other teenagers are in less imminent danger by virtue of where they are living and their current activities. Others are at very low risk currently.

In the 1986 Institute of Medicine (IOM) report, "Confronting AIDS," the committee stated, "over the next 5 to 10 years there will be substantially more cases of HIV

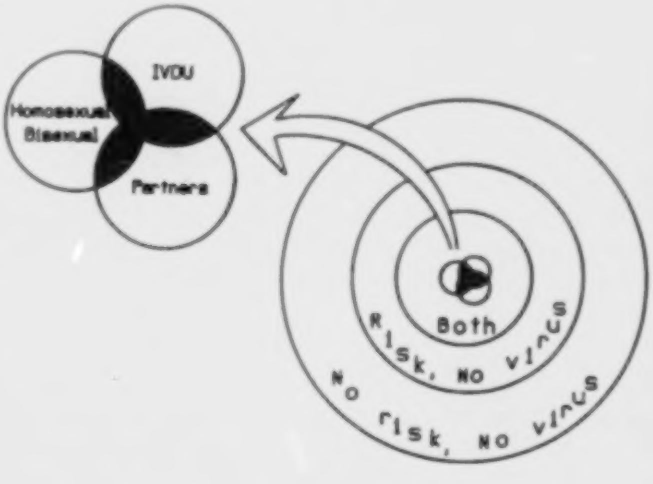


Figure 1. AIDS in adolescents.

infection in the heterosexual population and these cases will occur predominantly among the population subgroups at risk for other sexually transmitted diseases" (3).

Targeting this group, however, may have political overtones, as evidenced by the controversy surrounding the emphasis on young people in Surgeon General C. Everett Koop's October 1986 Surgeon General's report in which he stated, "Adolescents and preadolescents are those whose behavior we wish to especially influence because of their vulnerability when they are exploring their own sexuality (heterosexual and homosexual) and perhaps experimenting with drugs" (4). As Dr. June Osborn stated, "if you "do" preventive medicine and public health exactly right, exactly nothing happens and things are very dull. Let us pray for a little boredom" (5).

It is precisely because a large percentage of teenagers may not yet be infected that they should be a group targeted for intense preventive measures. The challenge to contain the spread of HIV infection is the epitome of preventive medicine.

CONCEPTUAL FRAMEWORK

We must create meaningful categories of risk within the teenage population in order to target specific recommendations for specific groups. The teenage population does not have a wall around it, nor is the infected adult population quarantined. Figure 1 provides a conceptual framework in which we might view adolescents (6).

The Outer Circle

At the center is a group of adolescents who are currently not at risk for HIV infection by virtue of their current lifestyle or the absence of the virus within their sphere of activities. These are the very young, virginal, nonintravenous substance abusers who have not received transfusions. However, as the individuals in this group get older or move to a different location or engage in new and different behaviors, they may move into a different circle, putting them into a higher risk category. Issues for them include:

"worried well" (how to live in an atmosphere of concern and maintain an appropriate level of concern without undue anxiety)

need for casual contact information (encouragement to engage in those activities that do not put them at risk)

support for sexual decision making.

The Second Circle

In the second circle are sexually active teens who are not yet exposed. The boundary between them and the at-risk teenager is fluid and easily crossed. As the virus becomes more prevalent, this group will shrink; as the next outer circle enlarges correspondingly. Issues for this group include:

knowing (or not be able to "know") their partners

reconsidering patterns of sexual behavior

use of contraceptives in general and condoms in particular.

The Third Circle

In the third circle are the at-risk teenagers. This group is at risk of HIV acquisition because of exposure to infected individuals. The overlapping circles forming the inside of the model provide possible sources of exposure. Exposure can emanate from any or several of the groups of adults or other teenagers shown including adult IV drug users, adult sexual partners of IV drug abusers, adult homosexuals or bisexuals, adult sex partners of homosexuals or bisexuals, teenage IV drug users, teenage sex partners of IV drug abusers, teenage homosexuals or bisexuals, and teenage sex partners of homosexuals or bisexuals.

It would appear from the reported cases of AIDS that many of these teenagers are most likely residing within inner-city areas in the mid-Atlantic states (New York and New Jersey in particular) and on the West Coast. Currently, minority group youths are disproportionately represented. Issues for these groups include:

decisions about testing

knowledge of serostatus of partner(s)

need for barrier methods of contraception

reconsideration of patterns of sexual behavior

decisions about continuing pregnancy

need for services geared to the adolescent age group for crisis intervention and follow-up of HIV-infected teenager and partners.

These categories are not mutually exclusive. The more the overlap, the higher the risk.

This model has both heuristic and practical value in that it can form the basis for a research and action agenda. It is important to remember that although the outer circle currently probably contains the most adolescents, the dimensions of each circle are unknown and are changing continually. Regardless of the dimensions, the categories each represent real adolescents.

AIDS EPIDEMIC UPDATE

National Data

Dimensions. The purpose in reviewing current statistics about the overall AIDS epidemic is to provide background for discussion about HIV infection in adolescents. An

"AIDS update" is almost a contradiction in terms. As fast as information is collected and disseminated, new information appears. Almost always this new information increases the pressure to act quickly.

As of January 1989, over 83,000 people have been diagnosed as having AIDS (Figure 2). The number of people estimated to be infected with HIV in the United States is approximately 1.5 million. Predictions are that 20-30% of those infected with HIV will develop an illness pattern consistent with AIDS within 5 years. The risk of developing the disease remains the same even if an individual remains symptom free for several years. The mean interval from the time of HIV infection to onset of the AIDS complex is greater than 7 years according to recent CDC reports (7). Approximately half of those diagnosed with AIDS have already died of the disease and its complications. In the absence of more effective treatments or a cure, it is anticipated that eventually most or all of the infected individuals will ultimately become symptomatic. Once symptoms appear, death is usually inevitable within several years.

Predictions for the next 5 years are that the number of AIDS cases will be about 270,000 by the year 1991. In a recent review of all previous surveys through October 1987, the CDC confirmed the earlier Public Health Service 1986 estimates for the number of HIV-infected individuals at 1-1.5 million people in the United States (8). The doubling time for new cases was about 6 months early in the epidemic, although there is recent evidence that it may have slowed to 13 months in adults (9). In Figure 3, the distribution of cases by risk category is shown. Although the vast majority of known AIDS cases are individuals who admit to being homosexual/bisexual men (66%) or intravenous drug users (17%), or both (8%), those with hemophilia or coagulation disorders (17%), and blood-transfusion recipients (2%), other subgroups are now emerging as important sources of reservoir of viral infection (7). In a recent review of modes of transmission of HIV, it is clear that the concept of risk behaviors rather than risk groups is more appropriate for understanding the spread of the virus (10). Heterosexual partners of persons with AIDS represent 4% of all cases. Heterosexual partners account for 2% of males cases and 28% of females cases.

Geography. AIDS cases have now been reported in all 50 states. Initial distribution of cases were clustered in San Francisco and New York. In most recent years, however, other urban centers grouped in the mid-Atlantic states region and Florida are areas of highest prevalence. More than one out of four cases in the United States has been

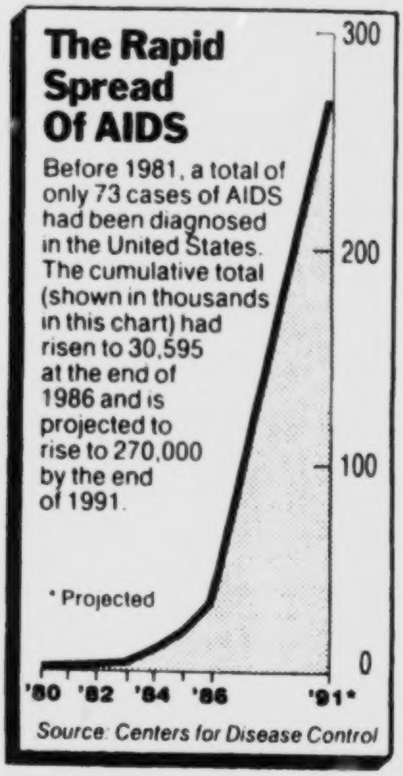


Figure 2. Spread of AIDS.

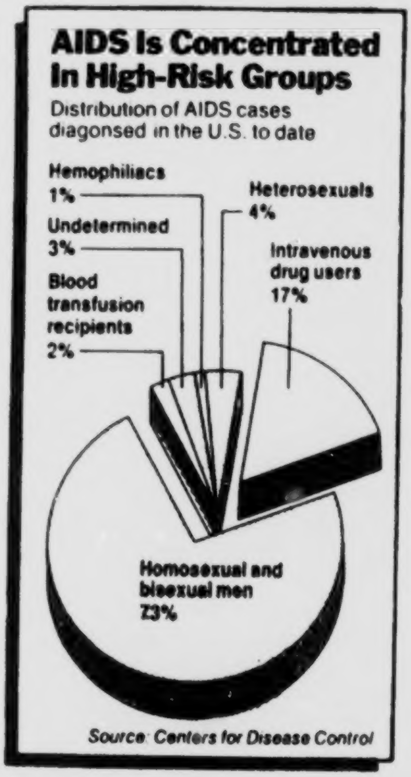


Figure 3. Distribution of AIDS cases by risk category.

reported from New York City, an AIDS epicenter (11). AIDS is now the leading cause of death among men 25-44 years of age and among women 25-34 years old. More than half of the people with AIDS in New York City are minority group members, whereas 44% of the city's residents are black or Hispanic. Intravenous drug users are becoming a main source of infection. It is estimated that 50-60% of the 200,000 IVDAs in New York City are infected, a higher percentage than in other parts of the nation. The notion of geography being destiny in this epidemic was born out by the AIDS map of New York constructed by plotting the number of AIDS cases per 10,000 people by community board location (12).

Age. The CDC reports generally group AIDS patients into children under 13 years of age and adults (7). Special criteria for AIDS case definition are applied to youngsters under 13 years of age. As of January 1989, there were 1,345 children in the United States under 13 years of age diagnosed as having AIDS. Of these patients, 61% of children versus 56% of adults had died. Over 72% of the pediatric AIDS cases with perinatal acquisition reside in New York, New Jersey, or Florida. School-age children 5-15 years of age only accounted for 62 AIDS cases (0.2% of cases), although they account for 16% of the U.S. population.

Gender. Among the adult AIDS patients, 93% are men (13). Ninety percent of those men are ages 20-49. Women with AIDS have now been reported from 41 states (14). Although there are only 4% of total cases of AIDS classified as heterosexually acquired, this category accounts for 28% of female cases. A larger percentage of female cases (51%) are listed acquiring AIDS through IV drug abuse but, in fact, many of them may have acquired it through heterosexual transmission. Predominance of women varies according to location, but 72% of the cases were reported from New York, New Jersey, and Florida. Their average age is lower than the men and there is a predominance of minority group representation (52% black, 27% white, 20% Hispanic). The lower male:female ratio of 0.5:1 in the youngest seropositive military recruits and 2.8:1 among adolescent cases of AIDS in New York City may be further evidence of a rise in heterosexual transmission, particularly among minonty groups in the mid-Atlantic states.

Sexually transmitted and other disease associations. Sexual contact has been the transmission route in 78% of all AIDS cases (13). In adult AIDS patients who were identified as no known risk group, 32% gave histories of gonorrhea and/or syphilis. Also, 27% of this group gave a history of prostitute contact. This suggests that contact with partners whose risk status was unknown or unsuspected might have been the mode of acquisition in these patients. Other communicable diseases may occur with excess frequency or severity in people with AIDS. The recent increase in reported tuberculosis cases in New York City, for example, is associated with young adult male AIDS cases, particularly among intravenous drug users (15).

Pregnant women. Recent seroprevalence studies of some groups of pregnant women or their offspring indicate alarmingly high rates of antibody-positive individuals in some AIDS epicenters (16). Two percent of such women were found to be seropositive in one survey of women attending a municipal hospital prenatal clinic. As stated above, one out of 61 babies born to women in New York City in November 1987 was antibody positive. Estimates of neonatal transmission rates vary from 35% to 50%. There are data to support the observation that pregnancy can accelerate the course and severity of HIV infection due to alterations in immune function. Impaired immune status may increase morbidity and mortality from a variety of viral diseases including cytomegalovirus and herpes as well as opportunistic infections like *Pneumocystis carinii* and toxoplasmosis (17).

Correctional facilities. The mid-Atlantic states emerge as a region with disproportionate preponderance of AIDS cases (18). Seventy percent of total AIDS cases in state prison systems and city and county jails occurred in New York, New Jersey, and Pennsylvania. The majority occurred in IV drug abusers (e.g., 95% of New York cases). Testing is being done or being planned in six state and seven city or county jail systems.

Military recruits. The Department of Defense first tested 308,076 recruit applicants for seropositivity between October 1 and March 31, 1985 (19). A more recent survey through December 1986 reported findings from viral antibody testing among 789,578 civilian recruits (20). The population consisted mainly of young adults in their early twenties (33%) and older adolescents (54%). The overall prevalence was 1.5 per 1000 recruit applicants. The male to female ratio was 3:1. The rate for blacks was 3.9 per 1000 as compared to 0.9 per 1000 for whites and 2.6 per 1000 for other racial groups. Prevalence increased with age. Of the total, 0.7% were ages 18-20 years, 6.5% were 21-25, and 92.8% were over 26 years of age. However, local differences in seropositive rates were marked (21). In counties with a very high prevalence of HIV, the rates of seropositive recruits were the highest. For example, the rates per 1000 in New York, the Bronx, and San Francisco were 20, 13, and 11, respectively, for male recruits and 17, 13, and 11 per 1000 for females. Adolescent recruits under the age of 20 years had the lowest male:female ratio of 0.5.

Blacks and Hispanics. Blacks and Hispanics represent a disproportionately high percentage of AIDS cases. The CDC reported in 1986 that 25% of cases were black and 14% Hispanic, whereas these groups represented only 12% (black) and 6% (Hispanic) in the American population (22). The rates are even higher for infected children less than 15 years, in whom 58% were black and 22% Hispanic, which is 15.1 and 9.1 times, respectively, the incidence for white children. These statistics underscore the importance of heterosexual transmission and the difference in racial/ethnic distribution between the homosexual and IV drug abusing populations. The geographic distribution was also striking, with more than 60% of adults and more than 70% of children living in New York, New Jersey, or Florida. Although the incidence of AIDS is rising in all racial and ethnic groups, the cumulative incidence of AIDS among black and Hispanics is three times that of whites.

Patterns of premature death. From 1975 to 1982, premature mortality decreased in New York City. However, this trend reversed in 1982 until the present due to increased mortality from AIDS. AIDS has become the leading cause of premature mortality in both men and women in New York City (23). In 1985 AIDS was the leading cause of years of potential life lost in males aged 15-64 surpassing suicide and homicide. Similarly, in 1982, AIDS became the leader in the cause-specific mortality in narcotic-related death in New York City (24).

International Data

AIDS in Africa. The most striking differences in Africa are the sex ratio (male to female) of 1:1 (25). In Africa, the age and age-specific rates are greater in females less than 30 years of age. Depending upon locale, 1-18% of pregnant women and 27-88% of female prostitutes are antibody positive.

The disease is predominantly spread by heterosexual activity, parenteral exposure to blood through transfusions, and unsterilized needles and perinatally. The finding that is most relevant and disturbing about the age distribution in Africa is Quinn's report about the teenage female population. When female age groups are divided into 5-year categories, the 15-19 year olds have the highest seropositive percent (9.8%) (26).

Adolescent Data

Currently, the number of reported AIDS cases in adolescents is low (1% of all cases), but it is doubling each year. Statistics for adolescents over the age of 13 years have only recently been reported separately from the adults. The CDC reviewed AIDS cases aged 11-24 in a 1986 report (27) and 13-21 year olds in 1988 (28). In the 1986 report, 37 cases were 11-17 years of age versus 1,122 between 18 and 24 years. Eighty percent of the younger males were transfusion recipients as compared to 4% of the older group. Homosexual or bisexual males comprised 18% of the younger group but 79% of the older group. Females in both age groups were mostly infected through sexual contact.

In the 1988 report, adolescents were compared to U.S. adults. Of the 614 adolescents cases 13-21, there were a greater proportion of females (14% versus 7%), minority group numbers (53% versus 38%), and heterosexually acquired cases (9% versus 4%). Nine hundred seventy-seven young people age 13-21 were reported to the CDC by January 1989 (Personal Communication, H. Gayle, CDC, January 1989). Analysis of cases of AIDS in adolescents in New York City is instructive for several reasons. New York accounts for roughly one third of all AIDS cases in the United States and also accounts for 20% of the reported cases in adolescents (29).

Analysis of 111 New York City adolescent cases 13-21 years revealed significant differences ($p < 0.0001$) in the sex ratio (male:female) of 2.9:1 compared with New York City adults (7:1) and U.S. adults (15:1) (30). Teenage cases increase with age ($p < 0.0001$). In the United States, 60% of cases were white, whereas minority groups predominated among both adolescent (58%) and adult (55%) cases in New York City. As in New York City adults, homosexual/bisexuality (44%) and IV drug abuse (21%), were the leading risk behavior categories in adolescents but the proportions in adolescent cases differed from adults (Figure 4). In adolescents, the percent of total cases was lower for homosexual/bisexual category and higher for IV drug abusers category. However, female partners of high-risk males were far more common among New York City adolescents (15%) than U.S. adults (4%) or New York City adults (8%). When data were separated by sex, heterosexual spread among female adolescents was even more apparent. Although the total number of reported female cases 13-21 years is small (63 in United States excluding New York City and 28 in New York City) a greater proportion were due to heterosexual spread as compared to adults. Forty-five percent of all teenage female AIDS cases were due to heterosexual spread compared to 21% of adult female cases. Nationwide, hemophilia is the leading risk factor for AIDS among young adolescent males, but in New York City only 11% of male cases were transfusion related.

These data show that critical differences in sex ratio, ethnicity, and reported risk groups exist not only between adolescents and adults, but also among adolescents from different localities.

In summary, with scanty information about the prevalence of HIV infection among adolescents, analysis of AIDS cases in New York City points to groups of young people in inner-city settings that are bridging groups to other adolescents.

Relevance for Adolescence

The current national and international distribution of AIDS cases by age, sex, geographic location, ethnic/racial group, and the relationship to sexually transmitted diseases has relevance for a discussion of the spread of the virus into the adolescent population (31). Analysis of regional data for New York City is useful for underscoring

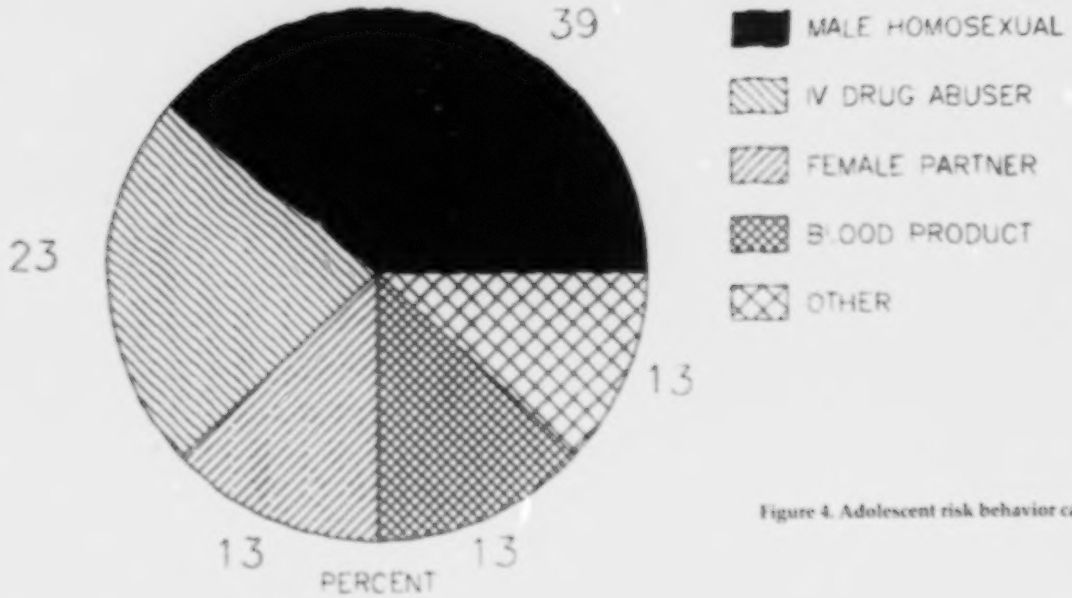


Figure 4. Adolescent risk behavior categories.

differences between adult and teenage patterns (30). From these statistics four points can be made.

1. Currently the absolute number and percent of cases of AIDS accounted for by persons in the adolescent age range of 13-19 years is small. There is a rapid rise in the percent of cases in young adults in their 20s, however. The number of HIV-infected adolescents is unknown.
2. The characteristics of affected adolescents throughout the nation have only recently been analyzed. Surveillance reports usually divide the population into two groups, children up to 13 years of age and adults. In various reports, age data have been grouped differently (e.g., The World Health Organization uses 5-year intervals whereas the CDC reports have used 13-19 years or 11-17 years and 18-24 years). Analysis of cases reported to the Department of Health in New York City points to a different pattern from adults. The lower percent of homosexuals and transfusion-related cases in New York City adolescents and the higher percentage of cases related to IV drug use and heterosexual transmission compared to adults in New York City and the nation are noteworthy.
3. The concentration of adult cases in certain areas within the mid-Atlantic states, West Coast, and Florida has particular relevance for further spread to the adolescent population. Several sources of infection, including bisexual adults, IV drug abusers and their sex partners, link the adolescent population in certain geographic areas to infected individuals. The features that characterize the AIDS cases in these locales are a high percentage among black and Hispanic urban young adults with a lower male:female ratio and a higher percent of IV drug users.
4. The long (but variable) latency period from viral infection to diagnosis of AIDS or death from AIDS is currently estimated to be 7 years on average. Therefore, persons infected during adolescence may well remain asymptomatic until young adulthood. Evidence for this phenomenon is the observation in 1987 that 10% of the mothers of AIDS babies in New York City were 21 years of age or less. Although many of these young women were well, they were identified as infected because they had an affected child. Preliminary studies in HIV-infected adolescent hemophiliacs reveal that teenagers remain asymptomatic longer than adults (32). The risk of developing disease does not decrease over time, and infected individuals transmit virus while remaining asymptomatic.

A Multidisciplinary Perspective

Illness always has cultural overtones and is often, in fact, socially defined. Susan Sontag has explored the very different culture of two of our most devastating modern diseases, tuberculosis and cancer, aptly calling her analysis, "Illness as Metaphor" (33). AIDS has, if possible, an even more complex multidimensionality, and as an epidemic is reminiscent of the early to mid-19th century cholera epidemics in its moralistic and judgmental components (34).

A focus on adolescents complicates the disease picture even further. By definition, adolescents in our society have distinguishing characteristics: physiologic changes unique to this age group, behavioral patterns peculiar to adolescents, psychologic differences related to both radical physical development and society's interpretation of that development, ethical factors that are related to the unclear status awarded to the adolescent, economic issues stemming from the dependent relationship of youth, and their need to establish independence coupled with complex sociopolitical issues.

Rationale for Concern

Because there are few data available on the current prevalence of HIV infection in adolescence, risk status for infection must be inferred from data collected for other purposes. This information will be summarized as follows: 1) sexually transmitted diseases; 2) physiologic considerations; 3) sexual behavior and relevant consequences; and 4) drug abuse.

Sexually Transmitted Diseases

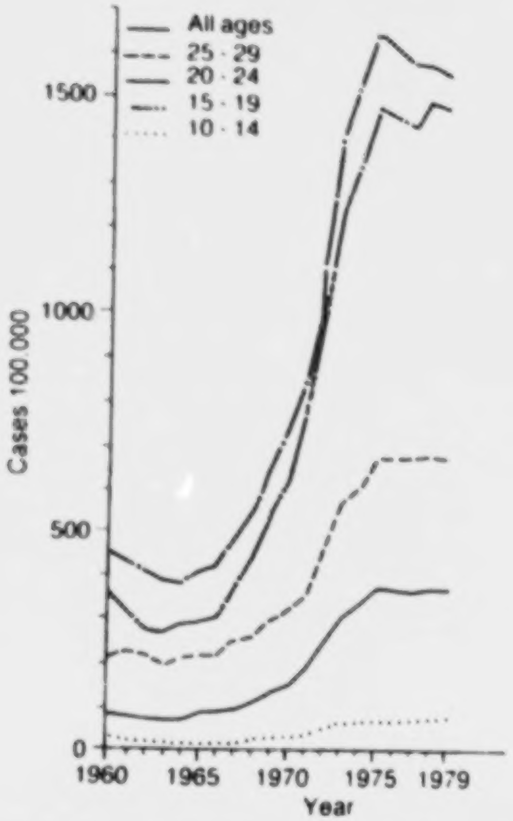


Figure 5. Number of gonorrhea cases per 100,000 population.

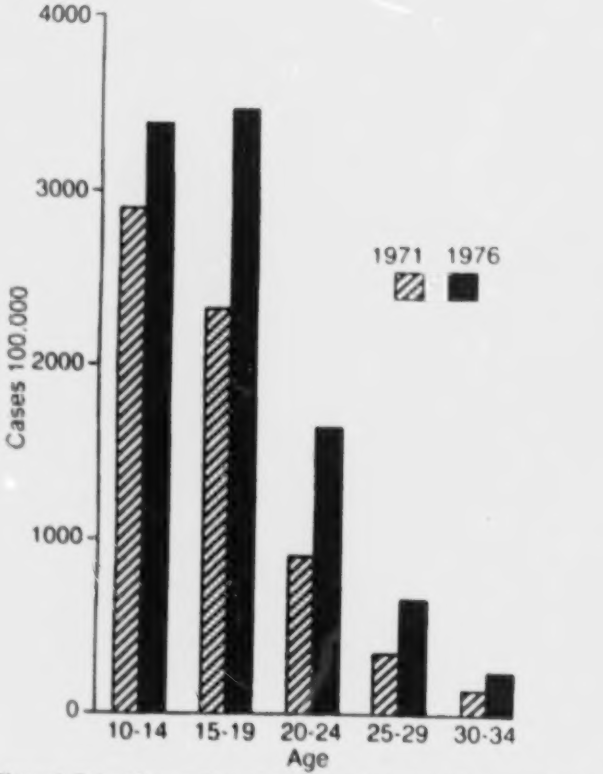


Figure 6. Rates of gonorrhea, among sexually active U.S. women by age.

A careful look at the incidence and prevalence of sexually transmitted diseases among adolescents may be one way to trace disease patterns that might be repeated by HIV. This step is useful in trying to predict patterns in advance of observing an increase in AIDS cases in order to target preventive measures.

National data regarding the incidence and prevalence of various sexually transmitted diseases can be very misleading when applied to the adolescent age range. If data are reported per 100,000 of population at a given age, it would appear that rates for the youngest adolescents (10-14 year olds) are the lowest as compared to other age groups through young adulthood (35). However, this is an artifact produced by using a denominator that is not relevant to the question.

In Figures 5 and 6, data are presented that give a more accurate portrayal of the rates of sexually transmitted diseases in American youth.

Instead of reporting the number of cases per 100,000 of population (Figure 5), national data have been recalculated and graphed using the percent of sexually active adolescents and young adults as the denominator in each age group. For 1971 and 1976, the 10-14 year olds and 15-19 year olds showed the highest rates of gonorrhea (Figure 6), not the lowest, accounting for roughly 3,500 cases per

100,000 of sexually active teenagers. For syphilis, the rate was 100-200 per 100,000 for the youngest groups. Rates of hospitalization for pelvic inflammatory disease were similarly highest in the youngest age groups when the denominator was corrected for percentage of sexually active females.

Asymptomatic sexually transmitted disease continues to be a problem in some segments of the adolescent population. Young delinquents arrested were screened for the presence of gonorrhea during the 1970s. Asymptomatic gonorrheal cervical infection was detected in 7% of these women (36). A similar study of young males all under the age of 17 documented a reservoir of 1.9% with positive urethral cultures but no symptoms of gonorrhea.

Few seroprevalence studies of asymptomatic HIV carriers have been systematically conducted in the United States among adolescent females. However, a distressing pattern has emerged in Central Africa. In Figure 7 (25), the prevalence of HIV-seropositive patients is plotted by age. The 15-19-year-old females have the highest percent of positive cases. The distribution of male cases has shifted to the right, reflecting the fact that the sex partners of African adolescent females are older men.

Hepatitis B is a viral infection common among adult homosexual and IV drug abusing populations. The presence of this virus has been suggested to be a cofactor in determining whether a seropositive individual will develop into an AIDS case. The overall prevalence of hepatitis B infection in American adolescents is unknown. Recent surveys have documented high rates in Asian and Central American teenaged immigrants (37). Outbreaks have been documented among youthful drug abusers and delinquents, particularly during the 1960s and early 1970s when heroin use was more prevalent (38).

Thus, from national and international data it is evident that the youngsters who are having intercourse at a very early age also have rates of sexually transmitted diseases that are higher than their young adult counterparts. They can harbor diseases like gonorrhea, syphilis, and chlamydia without symptoms that were prevalent prior to the introduction of HIV. We might expect, therefore, that these youngsters may become a new reservoir of undetected AIDS virus.

Physiologic Risk Features

There are anatomic and physiologic differences between adolescents and young adults that lead us to believe that teenage females may be at even greater risk than young

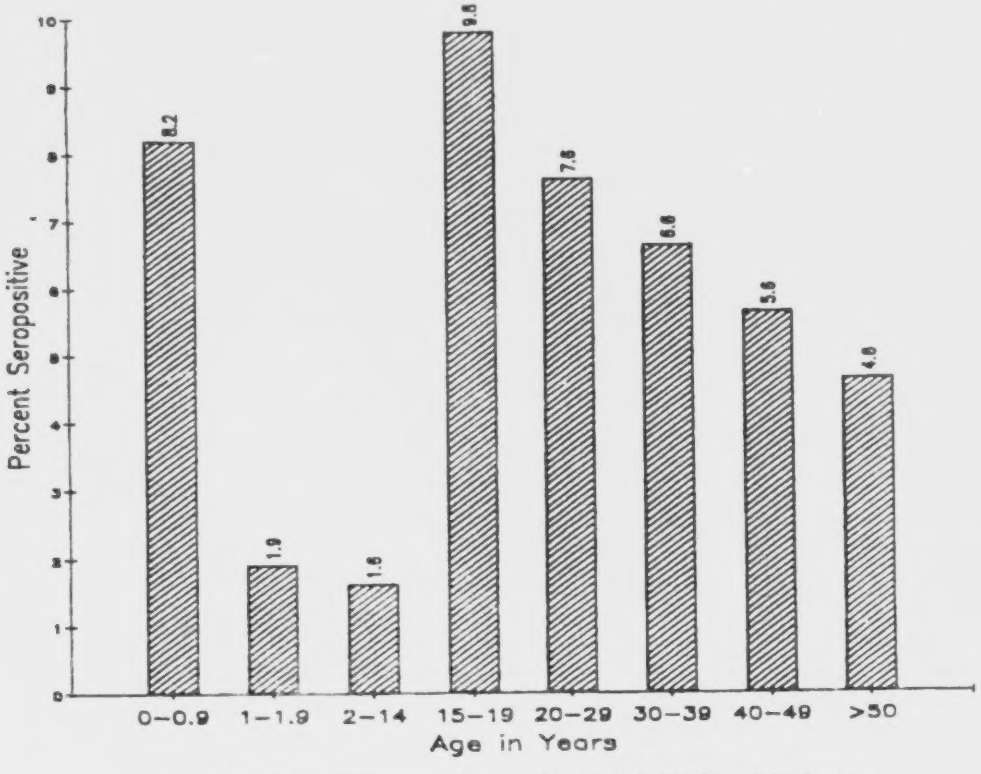


Figure 7. Prevalence of HIV-seropositive female patients in Kinshasa, Zaire, by age.

adult female for the complications of some sexually transmitted diseases and, by analogy, possibly AIDS (31). Biochemical differences in the developing female in whom menstrual pattens and vaginal, ovarian, and cervical function are incompletely developed may account for the higher complication rate.

One sexually transmitted virus, human papillomavirus (HPV) has been linked to the development of cervical carcinoma in adults (39). Other factors that have been identified as being useful in predicting increased risk of developing cervical carcinoma include early age at first intercourse and a history of multiple sexual partners. Adolescents with an early age at first intercourse do, in fact, have a high rate of abnormal Pap smears (40) and a high prevalence of HPV (41). Once again, the adolescent female may be at particular risk. Whether or not young adolescent females with early age at first intercourse are also at increased risk for HIV infection and consequent alterations in immune status is unknown at this time.

Behavioral Issues

The two behavioral areas directly related to AIDS incidence among, adolescents are sexual behavior and drug-related behavior. Needless to say, these are vast areas that a brief review cannot adequately cover. There are, however, certain specific aspects of these behaviors that have direct AIDS relevance and must be highlighted.

Sexual behavior. Adolescent Sexual Experience. In the United States, roughly half of the American teenagers have had intercourse by the age of 19 (42). However, among the 25 million adolescents 13-19 years of age, there are subgroups who have intercourse at either an early age or whose patterns of sexual behavior may put them at increased risk (43). Results of Zelnick and Kantner's studies conducted in the 1970s (Figure 8) reveal changes during that decade that have profound implications for the possible spread of HIV.

Approximately 60% of white urban females and approximately 80% of black urban females have had intercourse by age 19 in the latest survey (44). The greatest rise in the three survey years spanning the decade was in the adolescent white female population.

To complement the national data, regional data support the assertion that some adolescents are currently at greater risk than others for the acquisition and spread of AIDS (Figure 9).

Three curves are presented in Figure 9 that compare young inner-city women regarding their age at first intercourse (45). The curve on the left represents data for young women housed in a detention center. The curve in the center is based on data from young women living in group homes in the Bronx. The curve on the right was derived from Sorenson's data based on a national survey conducted in the 1970s (46). The average age of first intercourse in the detention population was 12 as compared to an average age of first intercourse for the nation at that time at age 16. The age of sexual initiation for the group home residents was intermediate between the other two. Some of these young women were runaways. Most were having intercourse with multiple partners with whom they had no lasting relationship and little knowledge of their partner's prior sexual or drug-related behavior. They begin to define a population of urban adolescents who may be at immediate and particular risk of HIV infection.

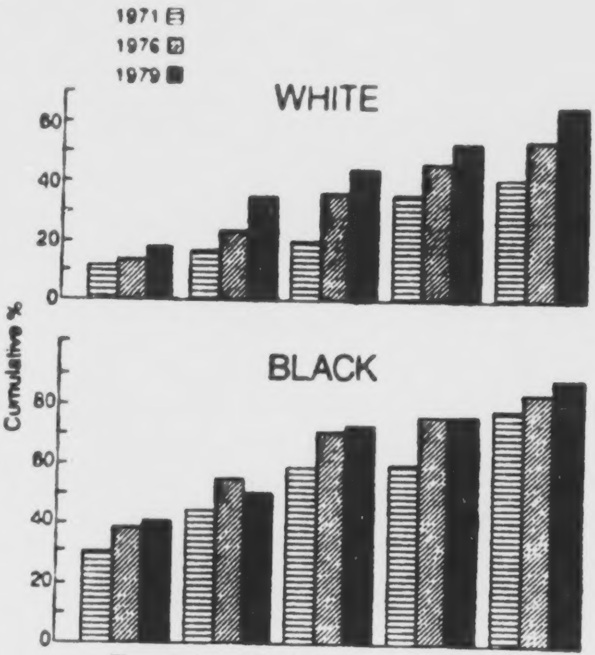


Figure 8. Age of first intercourse, by age and race.

Knowledge of some of the patterns of sexual behavior among adolescents who have had intercourse may help separate teenagers who are at greater risk from other teenagers. Following the scheme of Robert Sorenson (46), two patterns of sexual relationships are the "serial monogamous" relationship and the "sexual adventurer." According to his survey of American adolescents in the 1970s, roughly half of the nonvirginal females and only one quarter of the nonvirginal males can be described as being serially monogamous. Some serial monogamists also occasionally have intercourse with other partners besides the primary consort at that time. More than half of all sexually experienced adolescent females had intercourse with male partners who were 20 years or older.

The sexual adventurer was defined by Sorenson as being an adolescent who, during his teenage years, had a total of 17 partners by the age of 19 and who, in the month preceding the interview had an average of 3.2 sexual partners. The sexual adventurer, therefore, becomes another subgroup of adolescents at risk for acquisition or spread to his or her partners as compared to the serially monogamous adolescent. The sexual adventurer pattern describes approximately 41% of the sexually experienced adolescent males and about 13% of sexually experienced females in the country.

The percentage of adolescents self-identified as homosexual or who have had homosexual experience is unknown (47). However, some of the psychosocial and medical implications of teen homosexuality, including their reluctance to seek medical care, have been recently reported (18). Some of the sexual adventurers are heterosexual, some bisexual, and some homosexual, but the exact proportion in each group is unknown (49).

Contraception. Approximately half of sexually experienced adolescents used any form of contraception at first intercourse whatever the age at initiation (42). Oral contraceptives were used by approximately one third of teenaged females. Condom use varies trom 1% to 79% depending on the study and the population (50). One fourth to one third of adolescents have never used any form of contraception at all. According to a recent national public opinion poll, more than half of the teenage respondents reported being sexually active by age 17, yet only about here one third used contraceptives consistently. Ignorance about the choices available and their effectiveness was common, particularly among those who began sexual activity at an earlier age and who were socially or economically disadvantaged (51).

Pregnancy. Pregnancy, another consequence of early initiation of sexual activity among American teenagers, occurs in approximately 1 million teenagers every year, and roughly 85% of these pregnancies were unintended (42). In New York State every day roughly 180 teenagers become pregnant (52). Because adolescent females tend to have intercourse with males 2-3 years older, these younger females may be exposed to HIV infection and, thus, expose their offspring unintentionally. Minority group status appears to be associated with increased risks to both mother and child (53). In New York City and some other urban centers, HIV infection has been disproportionately identified in black and Hispanic groups. Because prenatal care is less likely to occur in young teenage pregnant girls as compared to adults, they and their babies currently have little opportunity to benefit from counseling or services that might inform them about risk to themselves or their offspring. For those adolescents who do seek prenatal care, particularlly in areas of high viral prevalence, HIV testing will be more widely available and offered as part of routine care if the recommendations of the CDC are implemented. The impact of having on-site testing available on utilization of family planning and prenatal services is unknown, but is worthy of careful attention.

Drug-related behavior. Past experience in the 1960s and early 1970s regarding drug abuse patterns may have relevance for the current AIDS epidemic (54). The drug problem in the teenage population was not appreciated early on because adolescents were traditionally grouped statistically with children or adults, not studied as a unique pop-

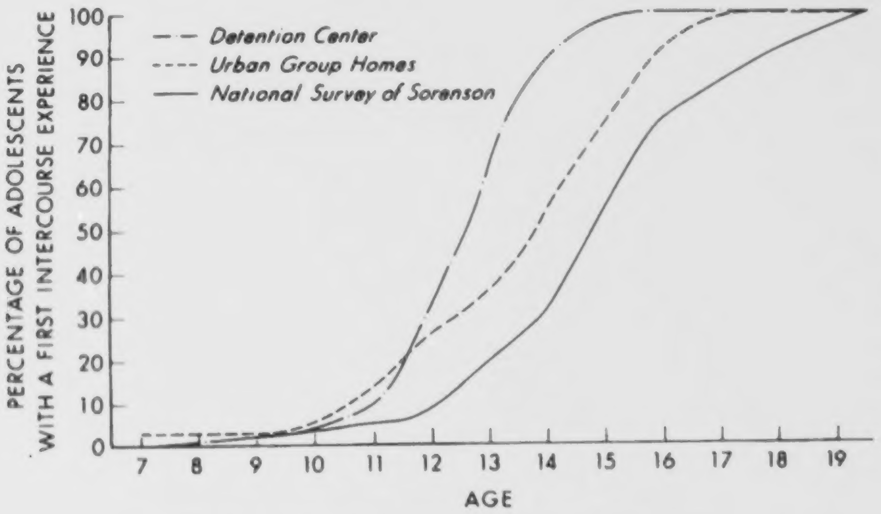


Figure 9. Age of intercourse for three groups of adolescents.

ulation (55). Services were organized for young adults long before an appropriate response was mounted by public health and educational agencies serving youth. In this case, we have an opportunity to intervene before large numbers of adolescents are infected and before the obvious medical sequelae of HIV infection have become apparent.

For the past 13 years, annual surveys of drug use among high school students have been reported by the Institute for Social Research (Figure 10) (56). Since the late 1970s and early 1980s there has been a decline in the use of most drugs, including marijuana, alcohol, and tobacco. In the latest survey, reported cocaine use has declined for the first time. The perception of risk has also changed in that more students now report "great risk" associated with cocaine use even if only used once or twice. The percent of seniors reporting current use of cocaine (4.3%) and use in the past year (10.3%) represent a decrease in use by one third and one fifth, respectively, over 1986.

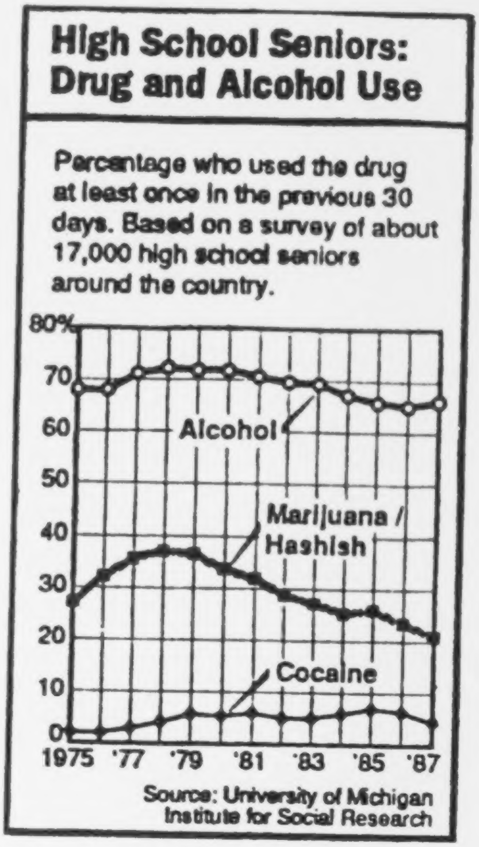
However, in those areas of high HIV prevalence, the high school dropout rate can be as high as 40%. Therefore the youngsters at highest risk for HIV acquisition may well have different usage patterns. Drug use can directly or indirectly increase risk by altering mood and mental status leading to potentially risky behaviors other than IV administration of drugs. In the Bronx, drug addiction is currently the major risk factor for AIDS. Two thirds of all AIDS cases are associated with IV drug abuse and about 50% of the borough's 60-70,000 IV drug users are believed to be positive for HIV antibodies (57). This group is mostly composed of young adults (20-40 years), who are black and hispanic, and who are sexually active with multiple partners, making large-scale heterosexual transmission a genuine possibility (58).

Psychologic Issues

The way in which adolescents may process information about AIDS will depend upon a number of factors including their level of psychologic development (59). The importance of applying psychosocial research methods to furthering our understanding of the impact of the AIDS epidemic and designing appropriate interventions is now becoming apparent (60). Some of the obvious areas include the psychosocial consequences of HIV infection and AIDS, psychosocial factors in relation to disease susceptibility, and the interrelationship of psychosocial state and medical status (e.g., delay in seeking treatment and the complex psychoneuroimmunologic interactions). During adolescence, there may be particular psychosocial factors to add to the equation. Four features may be particularly important in this regard: feelings of invulnerability, concrete versus abstract thinking, peer conformity, and denial.

Although most teenagers are aware of various dangers in the world around them, they frequently feel that, although others may succumb, they are immune. Feelings of personal susceptibility are often not present until a problem is experienced first hand. In relation to the AIDS epidemic, it may be that many adolescents will feel invulnerable until a neighbor, friend, or relative is affected before they can engage in meaningful preventive behavior. Speaking about college students, Dr. Richard P. Keeling, director of the University of Virginia's student health service, recently emphasized this psychologic aspect of older adolescents (61). There is, he said, "a belief on the part of many of our young people that AIDS can't happen to them." He went on to say that this belief coupled with "peer pressure, a desire for immediate gratification, a willingness to experiment and a high number of sexual partners puts college students at a very high risk." Thus younger and older adolescents have some similarities.

One of the developmental milestones that characterizes adolescent psychologic development is the ability to understand future consequences of current behavior. This requires the capacity to think abstractly. This pattern of reasoning can vary in a given individual depending upon



Source: University of Michigan Institute for Social Research

Figure 10. Drug and alcohol use among high school seniors.

the situation. Generally, the thought pattern of volunteer adolescents is quite concrete, that is to say, it is rooted in the present and to their current experiences. Approximately half of the mid-adolescent group can think abstractly, that is, they can imagine an occurrence in the future. The AIDS epidemic poses a somewhat more immediate and inexorable threat of death to the teen-ager than, perhaps, tobacco smoking. However, there is still a delay between the actions that may produce exposure to HIV and any illness or ultimate demise. Therefore, adolescents who are still thinking concretely are more apt to focus on immediate risk rather than long-term sequelae. For instance, teenagers may be more prone to avoiding more visible (but erroneous) forms of casual contact trying to avoid exposure to HIV such as drinking from water fountains or sharing clothing. These are tangible, albeit false, means of protection. The notion of transmitting a virus that cannot be seen and that invades internal body organs hidden from view is conceptually difficult for many adolescents.

In addition to individual psychologic development, group processes may also play an important role in the AIDS epidemic. Peer groups can support health-promoting behavior or foster activities that increase risk of HIV acquisition and spread. The cohort effect is apparent in the choice of sexual partner. Teenage girls tend to have intercourse with males 2-3 years older, thereby bringing one (potentially infected) older cohort in contact with a younger group.

Adolescent health beliefs are likely to influence their response to the AIDS epidemic. Their reaction will be affected by their degree of motivation for change, their perception of the value of taking action in actually reducing the threat balanced with assessment of the probability that the actions will actually reduce the threat. Some useful insight into teenagers' reaction is described in the literature on compliance (62). In general, adolescents define illness as the absence of health. Therefore, the idea of being an asymptomatic carrier of a deadly disease is a particularly hard one to accept for themselves or others.

When faced with unpleasant or threatening circumstances, a variety of psychologic responses are used to cope with the situation. Denial is a coping mechanism that teenagers often use to handle experiences perceived as being overwhelming. Fear can be a motivating factor if present in moderation. Excess fear often leads to denial. One example of an extreme form of denial is that some teenage girls deny pregnancy until they experience labor.

The implications of a worldwide AIDS epidemic is an overwhelming thought for adults and adolescents alike. Adults may choose a variety of options to handle this type of threat. A psychosocial research agenda has been suggested for adults based upon information gathered over the past 6 years (63). Homosexual men have altered sexual practices. However, many adults and most adolescents, feeling powerless to alter the course of human events, may deny the threat and continue their activities without considering the personal, peer, or societal implications.

Strategies for reaching adolescents in an effort to stem the epidemic are only now being developed (64). Some of the suggested approaches include: 1) "crisis theory" for designing education and prevention strategies; 2) "precede" framework as a model for understanding some of the factors that determine behavioral outcomes of AIDS prevention efforts; 3) "preventive intervention" methods including cognitive/behavioral approaches such as skills training, self-assessment activities, and use of social systems influences; and 4) "environmental" approaches including attention to cultural, gender, religious (etc.) differences and innovative use of printed and electronic media. Also included in environmental considerations is the effect of reducing barriers to care and increasing availability of prevention aids (e.g., mass or free condom-distribution schemes).

Surveys of Knowledge, Attitudes, and Beliefs

Information about adolescents' views on the AIDS epidemic has only recently become available. These surveys will be useful as a basis for planning and evaluating the effectiveness of various intervention strategies.

Four surveys of teenagers' knowledge, attitudes, and beliefs about AIDS have been conducted in 1985-7 (65-68). Each used different population bases (suburban versus urban) and different methods of data collection (telephone survey, structured interview, or self-administered questionnaire). The findings can be summarized as follows. Only a small percentage had received formal instruction about the disease in school, although the vast majority of those enrolled desired more information through school. Levels of knowledge varied, but teenagers were less likely to know general routes of transmission than adults. Adolescents thought that casual contact or donating blood were additional sources of infection. Many adolescents thought that one could "tell" who was likely to be infected. Although some teenagers reported changes in casual (nonintercourse) behavior because of fear of AIDS, few reported changes in those sexual behaviors that actually transmit virus. Among adolescents in the United States, risk of acquisition of HIV has been investigated in relation to knowledge. In San Francisco, white adolescent high school students were more knowledgeable than black adolescents about HIV transmission, etiology, and prevention (69). Perceived risk for contracting AIDS was greater among students with less knowledge. In a survey of homeless youth in Los Angeles, field workers interviewed street youth as well as young people living in shelters regarding their risk status as well as attitudes and knowledge about AIDS (68). In another study in New York, adolescents who reported participating in highest risk behaviors perceived themselves as being at low risk and also continued high-risk behaviors (66).

Ethical Issues

HIV infection has affected groups that have already experienced social and economic discrimination. Adolescents, like the homosexual and drug-using population, have sometimes been the target of misinformation, stereotyping, and generally negative societal views. In addition, the conflicting or ambiguous legal status of youth in various situations further complicates the context of ethical considerations.

Screening and testing. "Screening" refers to the application of HIV antibody tests to populations and "testing" refers to individual people on a case-by case basis. Ethical criteria have been suggested for the evaluation of proposed programs for AIDS screening and testing by members of the Hasting Center (70).

Practical Applications. Principles developed for adults must be modified for minors. The following types of questions require debate and clarification.

> Do adolescents have the right to control their own destiny in terms of being treated as an autonomous agent?
>
> Can groups of adolescents decide whether they should be tested (e.g., military recruits, juvenile delinquents), and if they can make these kinds of decisions, should they? Do adolescents have a right to refuse participation in screening?
>
> Do teenagers have the same right to privacy as adults? Should minors have access to anonymous testing? Should parents or other adults be notified if test results are positive for the presence of HIV virus? Should partners below the age of majority be notified if a partner is tested and found to be HIV positive?
>
> How should the adolescent be notified about results of testing or informed about the sensitive ethical and legal issues involved in testing? Should test results ever be withheld from adolescents? If testing is mandatory (e.g., military recruits) do adolescents have a right not to know?
>
> What are the implications if an adolescent knows about being seropositive and makes no effort to change his or her behavior and continues to place others at risk? Does the sexual experimentation common in adolescence constitute undo risk for individuals and their youthful partners? Can and should counseling services be confidential?

The answers to these questions are complex. Some of the answers will differ depending upon the developmental level of the involved adolescents. The emancipated minor might be treated differently than the immature individual. However, this debate clearly requires participation of those with considerable understanding of adolescent development rather than simply applying rules developed for adults.

Policies regarding screening and testing have been instituted within the past year that will affect the lives of thousands of adolescents (71). Applicants for entry into the military, the Job Corps, the Peace Corps, and dependent minors of adult employees of certain governmental agencies who will be living outside the United States are currently being required to undergo HIV antibody testing as a prerequisite for acceptance. A current review of 1987 laws has been issued (72), but the impact of these policies on adolescents has not been reported or systematically studied.

Economic Issues

Patient care costs. Economic analysis of the AIDS epidemic has largely centered around the cost of hospital care for the adult with AIDS (73). Various AIDS cost studies have deterrnined that the average cost per patient from diagnosis to death was $50,000 to $150,000 per patient. The average length of hospitalization was 31 days, with daily costs ranging from $830 to $1,100 per day as opposed to $350 for non-AIDS patients in acute care facilities. Testing costs are about $2-3 per test for enzyme-linked immunoabsorbant assay (ELISA) and $40 to $100 for Western blot (confirmatory test).

Cost estimates for care of adolescents are unknown. However, certain specific economic issues can be listed. Health insurance policies generally cover minors through 18 years of age. Extensions are possible while young adults remain in school full time. However, the majority of American youths older than 19 who are not fully employed or in school are not likely to have adequate coverage.

Inner-city youths frequently fall into an income category low enough to qualify for Medicaid eligibility. Many other youths are part of "working poor" families where income exceeds allowance for Medicaid eligibility. Often no alternative insurance plans are offered by employers, and the cost of individual or family participation in large third-party payer plans is prohibitive. Therefore, young people remain uninsured.

Alternative federal programs such as Supplemental Security Insurance (SSI) have included AIDS as an admission criterion if the individual is unable to work because of a physical or mental disability. Benefits are scaled in relation to age. The length of time required to complete the application procedures sometimes exceeds the life expectancy of the ill AIDS patient.

The majority of adolescents who are infected with HIV are probably going to be asymptomatic or relatively well for the next few years. Although some will be sick enough with AIDS or HIV-related illnesses to require hospitalization, the greatest need in the near future will probably be for ambulatory services.

Barriers that keep adolescents away from health services in general include payment requirements and lack of confidential services. Testing for HIV antibodies can often be arranged both anonymously and for free in many areas through testing sites or physician's offices. However, the full immunologic evaluation plus comprehensive physical examination can cost approximately $500. At present the enormous costs are absorbed either through research protocols that allocate funds for this purpose or by local health authorities (as in San Francisco). However, as the number of requests increases, these resources are stressed. Inclusion criteria for research protocols for youngsters often include children up to the age of 12. Alternatively, protocols for adults often begin at age 18 or 21.

Indirect costs. The types of expenses discussed above are basically direct economic costs. There are a range of indirect costs that are rarely factored into analyses. Many of these revolve around opportunity costs, or those costs to society incurred by the loss of a significant group of productive citizens, and snowballing costs, or those costs incurred as a result of expenses undertaken by other members of society who must change their lives because of people afflicted with AIDS. These costs range from those associated with lost productivity of the family member who cares for the AIDS victim to the costs to schools, churches, youth programs, and so forth of diverting resources to AIDS-related programs.

There are also vast expenses related to the industries that grow up around AIDS and adolescents, but these costs can also be viewed as benefits in terms of producing, for example, a service sector oriented toward AIDS and youth, a commercial industry centered around AIDS prevention through sales and marketing, and a research field devoted to exploring the issues of AIDS and adolescents.

Prevention and education costs. **Education costs.** Targeted funds for treatment of victims have preceded allocation of funds for prevention and education. Federal funds have been devoted mostly to treatment of individuals within the high-risk groups. Although Dr. Koop's plea for early education was made in October 1986, funds for developing intervention strategies for adolescents have not yet been defined.

In April 1987 Dr. Koop conducted a series of workshops outlining issues related to AIDS in children. Although one workshop was specifically dedicated to prevention and education, the main target groups of the workshop were young children and families, not adolescents. The recommendations and Dr. Koop's response are contained in the 1987 report (74). Although the initial charge was to make recommendations for children, nearly all of the ten workshops mentioned adolescents as a group requiring additional resources and attention. Specifically, the need for innovative techniques to reach teenagers, the need to assess prevalence and natural history of HIV infection, and the need for coordination of services were recommended.

Sociopolitical Issues

Beyond the individual and peer group concerns, there are larger sociopolitical issues raised by the AIDS epidemic. The institutions that teenagers populate are buffeted by and create forces that affect teenagers.

Schools. In 1985, school exclusion of AIDS victims was the subject of local and national uproar. Schools house unaffected teenagers, who may be at risk for HIV exposure, as well as those with HIV infection. Schools have been identified as a key location for carrying out proposed educational interventions (75). School curricula have been developed and implemented to variable degrees in New York City, San Francisco, and Indiana, and plans for implementation in other states are underway. Some programs are integrated into Family Life/Sex Education segments whereas others are free standing. Videotapes for adolescents, for example, "Sex, Drugs, and AIDS" (ODN Productions, New York City) and "Understanding AIDS" (Sunburst Communications, New York City) have been developed, but distribution in some areas has been delayed, becoming a point of controversy between parents, educators, and health professionals. A plethora of new pamphlets, booklets, and other printed guides are beginning to appear. However, testing the effectiveness of any of these modalities in changing behaviors has not yet been carried out.

From previous experience, it would appear that active participation of the students through discussion, debate, role playing, assertiveness training, etc., plus repetition and ongoing opportunities to modify views might be key elements in successful programs. The degree of responsibility of educators at primary, secondary, college, and graduate school level to inform, guide, protect, and act as advocates for their constituencies is being hotly debated presently.

Federal programs for youth and young adults. The Job Corps, branches of the military, and, most recently, the Peace Corps require testing as part of routine, mandatory admission procedures. These rules are presumably designed for the welfare of the individual enrollee as well as the overall well being of the group the individual is joining. However, the AIDS epidemic poses new questions regarding conflicts between individual rights and the overall good of a group (See Ethical Issues Section). The HIV screening currently being conducted needs further debate and clarification of purpose. The implications for young people differ from adults. In particular, exclusion based upon positive test results is an issue of immediate concern. The young person must not only deal with the disappointment of rejection, but is not offered ongoing help in a time of personal crisis. In addition, the stipulation for parental notification of testing results for persons under 18 years is contrary to requirements for other sexually transmitted diseases.

Media advertising. For the first time the ban on advertising condoms and other forms of contraceptives is being effectively challenged. Numerous groups (e.g., American College of Obstetrics and Gynecology and the American Academy of Pediatrics) have pressed this point within the past year. Major networks and periodicals have altered policies regarding condom advertising in particular. In addition, a few television programs have incorporated scenes in which protection or use of condoms was specifically mentioned. A random survey of 187 television and 445 radio stations found that one in five accepted condom ads. Two thirds of the TV stations planned to do so in the future. Mixed messages about sexuality are prevailing. One consequence of the continued ambivalence about openly discussing teenage sexuality is reluctance to promote condom use (76). Despite the absence of data to support the notion that contraceptive advertising promotes sexual experimentation by adolescents, this argument is still prevalent. Recent studies comparing the United States with five other industrialized nations concluded that, in fact, the adolescents in the United States have higher pregnancy and abortion rates than Canada, England, Wales, Belgium, and Sweden despite more liberal and pervasive sex education and contraceptive availability and adverbising in the other countries (77).

Parental notification requirements. Under the Reagan administration there have been numerous attempts to require parental notification (if not parental permission) before sex-related health services can be given to minors. This principle has been tested in relation to obtaining prescribed contraceptives and elective termination of pregnancy. Federal funding for the Title X programs and others has been linked to these requirements. At present some states do require some adult (if not parental) involvement before abortions are carried out, but the so-called "squeal law" (regulation requiring parental notification for prescribed contraceptives) was determined to be unconstitutional by the courts. This issue is of great importance regarding the AIDS epidemic because surveys have shown that teenagers would avoid health services and not use contraceptives if parental involvement were a requirement for care (42).

Strategies to prevent the spread of sexually transmitted diseases in the past have included the use of scare tactics for syphilis prevention during World War I. These attempts were not effective when tried 65 years ago (78). A new strategy for a national AIDS information and education campaign based upon behavioral research is being planned by the CDC in conjunction with the World Health Organization and the National Academy of Sciences this year.

Examples of Recent Responses to the Challenge

Within the past year there has been growing recognition of the special considerations for adolescents regarding the AIDS epidemic. Initially it was hoped that the activities could be concentrated in the area of prevention. However, it is now apparent that, although adolescents only account for a small percent of total AIDS cases, a growing number of adolescents are already infected. Therefore, a series of parallel activities must be launched to address the needs of a spectrum of adolescents from the uninformed to the "worried well" to the already infected or ill.

The following examples are listed to illustrate the range of responses in different parts of the country. Three operating assumptions underlie the development of interventions: 1) the heterogeneity among American adolescents; 2) the timeliness of the AIDS problem; and 3) the limitations of past interventions for changing behavior in relation to sexually transmitted diseases and drug use. We will need to go beyond traditional institutions for teenagers (schools and health care facilities) in order to reach many adolescents. Although most teenagers are in school, current controversy about the role of school-based health clinics and limitations imposed by school and parental groups present obstacles that delay necessary rapid interventions that might curtail the spread of HIV infection. Therefore, in addition to working within the framework of schools and the health care system, we must go beyond to identify organizations, settings, programs, and even individuals who can directly affect teenagers.

Adolescent Resource Groups

Resource groups have been formed representing various subgroups of adolescents. Focus groups have served as advisors to screen films, educational materials, program outlines, advertising appeals, survey questionnaires, and research protocols requiring adolescent cooperation. Specially trained peer counselors have helped in some supervised activities. A few examples are 1) the New York City Department of Health has been using focus groups to test the appropriateness and appeal of their brochures and educational campaigns; 2) high school students in Bethseda formed an AIDS Hotline in 1986 using volunteer students specifically trained to answer questions and make referrals; 3) the American College Health Association formed an AIDS Task Force to help develop and oversee educational and service activities on campus (including the use of peer counselors) for the college-age population.

Development of Educational Materials

During the past year, visual, audio, and printed educational materials specifically developed for adolescents have become increasingly available but access and cost are still pressing issues. However, attempts to evaluate their usefulness are only now being proposed. The film "Sex, Drugs, and AIDS," for example, was commissioned by the New York City Board of Education in 1985, completed April 1986, modified in 1987, and has thus far only been shown to graduating seniors in New York City schools. Both the original and the modified version of this film, however, are being used by community-based programs and other school programs in other parts of the country. Low-cost informational pamphlets for adolescents have been developed by various agencies including the New York City Department of Health and the Gay Men's Health Crisis. A low-cost handbook on AIDS for teenagers is being published by Consumer Report Books for use in schools, community-based agencies, or for personal use by teenagers and their families (79). Training programs for teachers, counselors, and other youth workers in the appropriate use of these educational adjuncts are now underway. Regional workshops have been organized by colleges, particularly in the mid-Atlantic states and California. AIDS-related curriculum planning is being encouraged through CDC initiatives and NSBA and other health and education sponsored workshops. There are plans to expand these activities in 1988 (80).

Currently, the CDC is establishing a central clearing house for existing materials. The Center for Health Promotion and Education at the CDC will coordinate these activities and make available guidelines for effective school-based health education (81). Agencies with information to offer include not only educational institutions, but also umbrella organizations such as the American School Health Association (ASHA), National School Board Association (NSBA), the Society for Adolescent Medicine (SAM), The Center for Population Options, and Sex Information and Education Council of the United States (SIECUS).

Analysis of Available Data

Available data are being analyzed with a focus on adolescents. Until 1987, data were generally collected, reported, and analyzed in terms of children under 13 years of age and adults. The CDC and local health departments in areas of high viral prevalence like New York are now disaggregating data and adapting existing protocols and software to enable those concerned about adolescents to separate teenagers from age groups bracketing adolescence. The age groupings used by various agencies differ. For example, the New York City Department of Health has been reporting adolescent AIDS cases ages 13-19 years since October 1987 in the monthly surveillance reports. The reports of The World Health Organization divide the age groups by 5-year intervals (10-14 years, 15-19, etc.). The earlier reports of the CDC used the division younger adolescents (11-17 years of age) versus older adolescents and young adults (18-24). These divisions each may serve a particular purpose, but they do make comparisons difficult.

Networks of Youth-Serving Agencies Concerned About AIDS

A few examples of networks of youth-serving agencies now exist. They facilitate the development and dissemination of educational materials, guidelines, and information. Several "Task Forces on AIDS in Adolescents" have been organized in major urban areas including San Francisco, Boston, Washington, and New York City. Each has participants from organizations in the educational, community-based direct service and health sectors. These groups have been used to facilitate referrals, share resources, develop policies, and identify problem areas (such as access, payment, confidentiality) for mutual discussion and resolution. These initiatives have developed on a volunteer basis, but their existence might enable innovative approaches to be developed with ongoing support in the future.

Many organizations previously involved with adolescent health, education, or welfare have shifted to include new services related to AIDS. One program exclusively dedicated to the issues raised by the epidemic for teenagers was launched in 1987 in New York City at Montefiore Medical Center affiliated with Albert Einstein College of Medicine.

Surveys of Attitudes, Knowledge, and Beliefs Among Adolescents

Little is known about adolescents' views and beliefs about AIDS. In theory, this should be a first step before developing programs or materials in any local area. In practice, the pressure of time requires that the most use be made of existing programs and of materials and curricula that can be developed quickly. Adapting pilot questionnaires already in use has been extremely useful to professionals who work with youth in the area of AIDS prevention. The more localized the survey, the more useful the results. But local areas often do not have the time, resources, or expertise to do survey analysis. Certain centralized efforts can support localities (82). A national survey is currently being designed for high school students by state education authorities in conjunction with the CDC.

Four pilot questionnaires have been developed specifically for adolescents in Boston (65), New York City (66), San Francisco (67), and Los Angeles (68). The questionnaires have been adapted for longitudinal use so that repeated periodic contact with different adolescent populations can be maintained. In this way, the spread of information, changes in attitudes, beliefs, knowledge, and behavior can be followed prospectively over the next few years. Longitudinal surveys of drug use among adolescents have been successfully maintained over the past decade. A similar effort has now been launched for AIDS.

More Widespread Condom Distribution

Condoms are being made more available by reducing cost and increasing distribution. Advertising has been one route to promote use as part of safer sex practices. Targeting mechanisms of distribution and barriers to teenager use is another strategy, albeit a controversial one. A mass condom-distribution campaign was instituted in a family planning clinic serving young adults in Atlanta and an adolescent pregnancy program in New York City. A survey of the Atlanta recipients who could have up to 50 free condoms was conducted to discern the number of condoms accepted and their fate. The appearance of "safer sex kits" containing condoms and information relevant to AIDS on some college campuses and the increase in condom availability via installation of conveniently located vending machines or other modes of distribution are examples of recent attempts to slow the spread of HIV in the adolescent population.

New Funding Initiatives

Although a variety of federal, state, local, public, and private agencies are now beginning to fund projects related to HIV infection, the mandates and categorical definition of the mission of each agency makes analysis of available resources for adolescents difficult. Some of the federal agencies include (but are not limited to) the following: National Institute of Child Health and Human Development (NICHD), National Institute of Allergy and Infectious Diseases (NIAID), National Institute of Mental Health (NIMH), National Institute on Drug Abuse (NIDA), Division of Maternal and Child Health (MCH), and CDC. One group of funding agencies, The New York Regional Association of Grantmakers, in their September 1987 meeting on "AIDS: An Update for Grantmakers" highlighted adolescents in the selected AIDS issues update (83).

HIGHLIGHTING THE SPECIAL NEEDS OF ADOLESCENTS

We are still in the first decade since the recognition of AIDS as a new syndrome. Only recently has attention shifted to include the special needs of adolescents in this epidemic. As "the AIDS generation," they face a new set of choices, problems, and consequences during their teenage years. The information contained in this report is offered as a springboard for further discussion, debate and action.

Some of the events that have helped introduce and support the need to recognize the distintive features of adolescents within the past few years include:

1986

The report of the Institute of Medicine, "Confronting AIDS" (3)

1987

The Surgeon General's Workshop on AIDS in Children and Their Families (84)

The conference on AIDS in Adolescence sponsored by The Center for Population Options (84)

Hearings on AIDS in Children and Adolescents conducted by the House Select Committee on Children, Youth and Families (86)

Report of the New York Regional Association of Grantmakers on AIDS: An Update for Grantmakers (83)

1988

Testimonies on AIDS in Adolescence before The Presidential Commission on HIV Epidemic (87-90)

Invitational Conference on AIDS in Adolescents: Exploring the Challenge sponsored by the Bureau of MCH and Resources Development, CDC, Child Development Center at Georgetown University, NICHD, NIMH, NIDA, and SAM.

Recommendations from the four working groups of the Invitational Conference on AIDS in Adolescence (Prevention and Education, Services and Treatment, Policies, and Testing and Epidemiology) are included in this special edition of the *Journal of Adolescent Health Care* (91). Six regional follow-up conferences are being planned for the spring of 1989.

Both the epidemic of AIDS and AFR-AIDS will affect the lives of all adolescents in the United States in the years to come. The basic message in this report is the need to recognize the special need and opportunities related to AIDS in adolescence. Thoughtful but quick action is the goal. If we cannot determine and deter the AIDS risk for our adolescents now, we are likely to face massive morbidity and mortality among our young adults in the near future.

Glossary

This was adapted from The Institute of Medicine 1986 Report (3).

AIDS (acquired immunodeficiency syndrome). A severe manifestation of infection with human immunodeficiency virus (HIV).

ARC (AIDS-related complex). A variety of chronic symptoms and physical findings that occur in some persons who are infected with HIV but do not meet the CDC's definition of AIDS. Symptoms may include chronic swollen glands, recurrent fevers, unintentional weight loss, chronic diarrhea, lethargy, minor alterations of the immune system (less severe than those that occur in AIDS), and oral thrush. ARC may or may not develop into AIDS.

Antibody. A protein in the blood produced in response to exposure to specific foreign molecules. Antibodies neutralize toxins and interact with other components of the immune system to eliminate infectious microorganisms from the body.

Antigen. A substance that stimulates the production of antibodies.

Casual contact. Refers to day-to-day interactions between HIV-infected individuals and others in the home, at school, or in the workplace. It does not include intimate contact, such as sexual or drug use interaction, and it implies closer contact than chance passing on a street or sharing a subway car.

Cofactor. A factor other than the basic causative agent of a disease that increases the likelihood of developing that disease. Cofactors may include the presence of other microorganisms or psychosocial factors, such as stress.

ELISA. An acronym for enzyme-linked immunosorbent assay, a test used to detect antibodies against HIV in blood samples.

Frank AIDS. Those cases of infection with HIV meeting the CDC's definition of AIDS.

Hemophilia. A rare hereditary bleeding disorder primarily of males, inherited through the mother, caused by a deficiency in the ability to make one or more blood-clotting proteins.

HIV (human immunodeficiency virus). The name proposed for the causative agent of AIDS by a subcommittee of the International Committee on the Taxonomy of Viruses.

Sensitivity. In serologic testing, the percentage of people who test positive who in fact do have the condition being tested for.

Seroconversion. The initial development of antibodies specific to a particular antigen.

Seropositive. In the context of HIV, the condition in which antibodies to the virus are found in the blood.

Specificity. In serologic testing, the percentage of people who test negative who in fact do not have the condition being tested for.

Syndrome. A pattern of symptoms and signs, appearing one by one or simultaneously, that together characterize a particular disease or disorder.

Western blot technique. A test that involves the identification of antibodies against specific protein molecules. This test is believed to be more specific than the ELISA test in detecting antibodies to HIV in blood samples; it is also more difficult is to perform and considerably more expensive. Western blot analysis is used by some laboratories as a confirmatory test on samples found to be repeatedly reactive on ELISA tests.

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A Theoretical Approach to School-based HIV Prevention

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ABSTRACT: To develop effective school-based programs to prevent the spread of AIDS, programmers must apply principles related to learning and behavior change. Due to the complexity of influencing contemporary adolescent sexual behavior, a multidisciplinary approach using multiple intervention strategies is essential. Health promotion efforts should include policy mandates, direct intervention, instruction, environmental support, media, role modeling, and social support. Consistent, continuous messages through multiple channels (school, home, community, and media) and by multiple agents (parents, peers, and health and education professionals) need to be provided. Examples of appropriate intervention strategies that may be employed by the professionals working in the school and the community are provided. (J Sch Health 1989;59(2):59-65)

AIDS and the spectrum of Human Immunodeficiency Virus (HIV) infections present a monumental challenge to the health of the American public. In response to this special challenge, the U.S. Surgeon General[1] has cited public education and voluntary behavior changes as the most effective measures to fight the spread of the disease. The public school enterprise, given its organizational capacity to reach 45.5 million students annually, often is targeted as the focal social unit to inform school-age children and youth about factors that influence personal health status.[2]

Adolescents represent a critical risk group for prevention and intervention programming. While only 1% of AIDS cases are found among adolescents,[3] several factors indicate a need for immediate intervention strategies. Between 1971 and 1982, the proportion of sexually active adolescents increased from 28% to 42%.[4] Adolescents 15-19 years old have the highest overall rates for sexually transmitted diseases when reported rates are adjusted for frequency of sexual activity.[5] Of adolescents who use contraception, only 21% use condoms.[6] Research indicates about one-fourth of male adolescents have experienced orgasm through homosexual contact.[7] Further, about 29% of high school seniors have had experience with an illicit drug within the past month; 1.2% of these individuals used heroin.[8]

These characteristically adolescent risk-taking behaviors suggest the need for schools and communities to immediately mobilize intervention strategies. The potentially devastating impact of AIDS on the nation's youth is illustrated by the millions of dollars the federal government has earmarked for AIDS education.[9] However, several variables impede a rapid response by the educational community:

1) Many teachers may not be prepared to teach about human sexuality or AIDS since human sexuality education courses are not included in the curricula of most teacher training colleges.[10]
2) Many individuals associate AIDS with behavior regarded as immoral or illegal and therefore refuse to support educational programs.[11]
3) Some consider frank discussion of preventive measures unacceptable to community standards.[11]
4) A few teachers have refused to instruct HIV-infected students.[12]
5) Some schools with HIV-infected students have experienced public hysteria in the form of student boycotts.[13]

These obstacles must be overcome if schools are to respond to the Surgeon General's request for specific AIDS education beginning early in the academic program of each student:

> ". . . *our youth are not receiving information that is vital to their future health and well-being because of*

> *our reticence in dealing with the subjects of sex, sexual practices, and homosexuality. This silence must end."*[14]

Educators, regardless of their content area, are well-grounded in learning theories. However, these tenets often are overlooked when planning primary prevention and intervention programs for a controversial subject such as AIDS. As a safe response to media attention and community outcry, school programmers frequently gravitate toward emotionally based or "band-aid" reactive approaches to the problem. A more proactive and educationally sound approach to health education, and specifically to AIDS, is needed if education is to intervene in the spread of this disease.

IMPLICATIONS OF LEARNING THEORY FOR AIDS PROGRAMS

Walberg[15] identified nine factors required to increase affective, behavioral, and cognitive learning. Three factors apply specifically to student aptitude. Without these factors, students learn little in the school setting. Student aptitude variables include 1) ability or prior achievement, as measured by standardized testing, 2) development or maturation, and 3) motivation or self-concept, as indicated on personality tests or in tenacity with learning tasks (Figure 1).

Two instructional variables, the amount of time on task and quality of the instructional experience, including both psychological and curricular aspects, also affect learning. These five essential factors are determined only partly by trained educators since curriculum is influenced by diverse economic, political, and social forces of the tax-paying public. Further, ability and motivation are influenced by parents, prior learning, and the students themselves.

Four environmental factors consistently affect learning. The educationally stimulating psychological climates found in the home, classroom social group, and peer group outside of school are critically important. Research indicates that use of out-of-school time, specifically the amount of time spent watching television, also is a powerful variable. These environmental factors directly and indirectly influence learning by raising student ability, motivation, and responsiveness to instruction.

Aptitude Variables

Effective AIDS intervention and prevention programs should incorporate those factors identified in the context of general learning. Examination of the aptitude variables identified by Walberg[15] reveals that, while education programmers have little impact on innate ability, they must consider developmental factors of chronological age as well as social and psychological maturation. Elementary schoolchildren have different developmental values, social reference groups, and physical, psychological, and cognitive needs than their upper grade counterparts.

Developmental theorists[18] indicate that five- to seven-year-olds value a sense of duty, accomplishment, and an acceptance of rules. Eight- to 10-year-olds, while experiencing more intense peer influence, take strong cues about acceptable behavior from adult role models. A transition from parental role model to conformity to rules assigned by peer groups occurs between ages 11 and 13. At this time youth have as a principle role, developing and asserting their own value system in the context of a strong peer influence. While 14- to 16-year-olds need acceptance and security from parents, an intense peer group influence often results in conflict between peer and adult role models. Thus, the abstinence or "just say no" models used in health education curricula in the areas of human sexuality and drug education prove minimally effective in secondary schools.[17,18] Adolescents often experiment with sex and drugs specifically to rebel against authority figures such as parents, teachers, religious leaders, and police.[19]

Though Walberg[15] found motivation and self-concept to be weaker correlates than ability and development on learning, they affect the process. Research has demonstrated that students with low self-esteem are more likely to display dysfunctional behavior.[20] Health and education professionals maintain that a healthy self-concept is central to optimal well-being.[21]

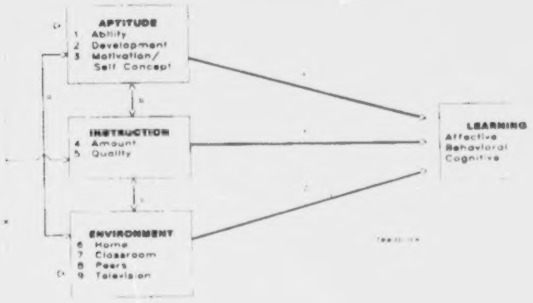
Instructional Variables

In the context of instructional variables that focus on amount of time and quality of instruction, the optimal place to begin is in elementary school. The report of the Presidential Commission on the Human Immunodeficiency Virus Epidemic[22] explicitly expressed the long overdue need for the introduction of a mandatory, comprehensive K-12 health education curriculum. The Commission called for the elimination of issue-by-issue stop gap measures to correct the problems afflicting today's youth and to begin to address the problems in total through a planned comprehensive health education program.

Research has demonstrated that 40-50 hours of instruction is necessary for health behavior change to occur.[23] Interestingly, 23 states do not mandate any health instruction in public schools.[10] Of 27 states that mandate some form of health instruction, the average number of hours required in the entire high school health experience covering all health education topics is only 25.8 hours.[10] A 1987 survey by the National Association of State Boards of Education[24] revealed 18 states and the District of Columbia specifically mandate AIDS education. While it is commendable to mandate both AIDS education and comprehensive health instruction, a discrepancy exists in the quantity of health instruction offered to most students and

Figure 1

Causal Influences on Student Learning[19]



Aptitude, instruction, and the psychological environment are major direct causes of learning (shown as double arrows X, Y, and Z). They also influence one another (shown as arrows a, b, and c), and are in turn influenced by feedback on the amount of learning that takes place (shown as broken arrows).

Excerpted from: Walberg H: Improving the productivity of America's Schools. Educ Leader 1984;41(8):19-30.

Figure 2

Educational Strategies for Health Instruction Goal[28]

Instructional Goal	Description	Strategic Methods to Attain Goal	Examples of Specific Impact from STD instruction
Health consciousness	Raising awareness	Lectures Group work Mass media Displays Exhibitions	I know that AIDS is a life threatening disease which has no cure
Knowledge	Understanding specific information in regard to health messages	Lectures One-on one teaching Displays Exhibitions Written materials	I know the various ways the HIV virus is transmitted
Self awareness/ Attitude change/ Decision making	Clarifying those values about health which are personally important to the individual	Group Work Strategies for increasing self awareness, clarifying values, changing attitudes, and making decisions such as ranking, categorizing, role playing, or simulations	I accept that my behavior will affect my risk for contracting AIDS
Behavior change	Carrying out a decision to do something about a health issue	Group Work Self monitoring Identifying cost, benefits, and rewards Setting targets and evaluating progress Devising coping strategies Self-help groups	I am going to refrain from sexual activity until I commit myself to a mutually monogamous relationship I am going to use condoms and spermacidal foam containing nonoxynol-9 if I am sexually active
Social action	Changing the physical and/or social environment to facilitate enhancing behavior	All the strategies listed above plus lobbying, pressure groups, and collective health action	I am going to volunteer to work in a local hospice with AIDS patients I am going to participate in peer helper program focusing on abstinence & decision-making which promotes safer sex

Adapted from: Ewles I, Semmett I: Promoting Health: A Practical Guide to Health Education. New York, John Wiley and Sons, 1985.

that which is required to effectively influence health behavior. More time must be invested in AIDS education if health-enhancing behaviors are to be adopted because behavior change increases in direct proportion to the amount of instruction.[21,25]

While an abundance of research reinforces the concept of adequate time on task, educators also need to focus on the quality of instruction students receive. Quality instruction is grounded in such fundamental principles as the need to structure learning activities in the cognitive, affective, and behavioral domains, to attend to Bloom's taxonomy of the hierarchy of learning, and to respond to the heterogeneous nature of public school populations. However, much classroom time is spent on content mastery in the cognitive domain, which focuses principally on recognition and comprehension rather than on application and synthesis.

Further, curriculum personnel spend much time searching for the definitive textbook series or prepackaged curriculum. Consequently, curricula rarely are tailored to the needs of a specific group of students. When students do not respond to the model curriculum as expected, they often are categorized as less than model students. Certainly, prepared curriculum materials provide direction or, more aptly, a starting point for busy teachers. Nonetheless, complete reliance on such materials without considering the special needs of students is inappropriate.

In health education, planners must develop lessons that raise awareness or comprehension and that facilitate adoption of health-enhancing behavior. Because about 50% of the factors contributing to the 10 leading causes of death in the United States are related to unhealthy lifestyle,[26] health education is obligated to facilitate incorporation of health-enhancing behavior into personal practices. While other content areas in the school curriculum focus primarily on content mastery, health education also must address attitude and behavior. A review of literature[27] documenting effects of school-based human sexuality education, however, revealed that such programs sometimes focus primarily in the cognitive domain. Some courses increased student knowledge, and some facilitated attitude change, but the programs had little effect on sexual behavior.

Figure 2 presents a simplification of Bloom's Taxonomy of Learning developed by Ewles and Semmett.[28] The diagram illustrates a range of instructional goals from raising consciousness and increasing knowledge, which are fundamental to the decision-making process, to applying decision-making principles in the context of personal behavior management and social action. While factual information that raises students' awareness to the life-threatening nature of the disease is fundamental, specific information also is needed to understand the behaviors that will put one at risk for acquiring the disease. How-

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ever, this information alone is not sufficient.[23,29] Instructional goals also must include skill development as a means to decision-making, behavior change, and social action. The complexity of the AIDS issue dictates that AIDS programmers move beyond didactic instruction and develop refusal, assertiveness, peer pressure management, communication, decision-making, and esteem enhancement skills.[23,29]

The concept of social action, which traditionally includes activities such as lobbying and participation in pressure groups, must be applied in context of the aforementioned child development factors. Given the importance of identifying with a peer group, it is critical to enable students to have social impact within the youth culture of which they are members. In addition, unless these skills of youth are reinforced by an enlightened community of powerful adults who are of age to vote and participate in policy-making, student social action efforts are undermined. Activities the community may undertake to reinforce student social action include support for comprehensive health education, demonstration of acceptance of AIDS patients, provision for easily accessed, quality, nonjudgmental health care, including reproductive health for adolescents, and social sanctioning and media reinforcement for responsible safe sexual behavior.

Support modeled by the community reinforces the educational messages received in the classroom. The significance of the relationship between schools and supportive communities must not be underestimated. Schools do not exist in isolation from the community which sanctions their existence through tax support.[30] Further, learning is not synonymous with schooling since most learning occurs outside the formal classroom setting,[31] thus, collaboration between school and community leaders that mutually supports health-enhancing behavior holds promise in AIDS prevention programs.

Environmental Variables

Walberg's research[15] reinforces the concept of schools and communities working collaboratively. The four environmental factors Walberg identified, the home, the classroom social group, the peer group outside of school, and use of out-of-school time (specifically those hours spent watching television), consistently affect learning. Children not only learn directly from parents, peers, and the media, but these groups have the ability to indirectly influence motivation and responsiveness to instruction.[15]

The work of health scientists has reinforced the importance of considering these environmental variables when designing instructional programs.

Parcel[32] summarized several reviews of models proposed to explain health behavior. The most powerful variables in explaining health behavior were: 1) accessibility of health services, 2) attitude toward health care, 3) perceived threat of illness, 4) knowledge about disease, 5) social interactions, norms and structure, and 6) demographic characteristics. To maximize the success of an educational program designed to stop the spread of AIDS, attention to these factors is paramount. For example, groups who acknowledge they are at high risk for AIDS, such as homosexual/bisexual males and intravenous drug users, have demonstrated rapid and profound changes in behaviors.

Unfortunately such behavior change among adolescents has not occurred at a similar rate.[33,34] Most adolescents do not perceive AIDS to be a personal threat. In a study of 250 Ohio youth,[35] 73% indicated they were not worried about contracting AIDS. In Massachusetts, 61% of 829 randomly selected adolescents did not think it likely they would get AIDS.[34] In San Francisco, though 79% of adolescents expressed fear of getting AIDS, 53% also felt they were less likely than most people to contract the disease.[23]

CONSISTENT MESSAGES THROUGH MULTIPLE CHANNELS

AIDS programs should be meaningful and useful to school staff and community. Realistic plans should be achievable and they should not consume an inordinate amount of the school's resources or be so intensely focused that other school functions suffer.[36] Effective programs take advantage of the school system's existing human and programmatic resources. Human behavior and learning result from personal interpretation and assimilation of multiple stimuli, thus, the more frequently a specific message is disseminated through a variety of channels or settings, the more likely the internalization of that message will occur.

Many channels exist within the school system to reinforce AIDS messages. Figure 3 lists specific settings and individuals to disseminate the message, including administrators, health educators, classroom teachers, librarians, school nurses, guidance counselors, school psychologists, physical educators, coaches, worksite health promotion staff, parents, peers, and community members. Haffner[29] asserted that AIDS education should not be the responsibility of any single sector of the community. She urges parents, schools, churches and synagogues, community agencies, youth serving agencies, and health organizations to get involved.

While high quality health instruction occurring in schools and communities has promise for reducing the spread of AIDS, the potential risk to youth demands the use of a health promotion orientation. In the Surgeon General's report, *Healthy People*,[26] health promotion efforts begin with the development of community and individual measures that can help people develop lifestyles which maintain and enhance well-being. Consequently, a more broadly based concept incorporates educational efforts as

Figure 3
AIDS Prevention Strategies

	Total School Environment Superintendent Principals Administrators	**Classroom Instruction** Elementary Teachers Secondary Teachers Content Specialist & Librarians	**Health Services** Nurses	**Physical Education** Coaches Trainers	**Counseling** Counselor Psychologist Social Worker	**Worksite Health Promotion** Staff	**Integrated School & Community** Parents Peers Community Members
Policy	Development of Policies 1) Admission of staff/student with AIDS 2) AfrAIDS management 3) AIDS instructional mandate 4) Confidentiality procedures for both students and staff 5) Identification & referral procedures for high risk students 6) Primary care clinic	Comply with all AIDS policies and assist with their development if requested	Implement body fluid management policy Comply with all AIDS-related policies and assist with their development if requested	Comply with all AIDS policies	Comply with all AIDS policies and assist with its development if requested	Comply with all AIDS policies	School Board Policy developed with sanction and support of school/community task force Develop task force/coalition for AIDS policy development if not present
Environmental Change	Enforce AIDS policies Establish Primary Care Clinic with Reproductive Service Install condom dispensers in all secondary restrooms Use halls and display cases to raise AIDS awareness	Implement policies regarding body fluids Use teachable moment to reinforce AIDS educational messages Demonstrate acceptance of HIV-infected teachers/students Display posters & exhibits on AIDS prevention & sexuality education	Implement Primary Care Clinic with reproductive health care services Use clinic areas to raise AIDS awareness Make condoms available free of charge (easily available)	Use the physical education and athletic facilities to raise AIDS awareness	Integrate counseling role into primary health core clinic Use the counseling facilities to raise AIDS awareness	Use the faculty/staff room to raise AIDS awareness	Use all community agencies to raise AIDS awareness via posters, displays exhibitions Display & openly promote condom distribution in community clinic
Media Utilization	Provide AIDS prevention messages via school PA system	Use student newspaper to deliver AIDS prevention updates, sexuality education Use AIDS prevention videos	Develop and distribute infection control media for faculty/staff Distribute factsheets on HIV, Hepatitis B, Cytomegalovirs (CMV), etc Provide easily accessed pamphlets about the location of anonymous testing sites		Provide easily accessed pamphlets about the location of anonymous testing sites	Use faculty/staff newspapers and paycheck stuffers to deliver AIDS prevention update Provide easily accessed pamphlets about the location of anonymous testing sites	Develop PSAs for radio, T.V. and newspapers Develop local T.V./radio programs around teen sexuality & AIDS issues Use local media to highlight school's programming on AIDS Organize a parental task force to advocate for the depiction of responsible sexual activity in the media
Direct Intervention	Support and enforce established intervention programs and policies Identify local STD clinic/anonymous testing sites in student handbook directory	Identify and refer high risk students for intervention programming Create an atmosphere sensitive to the esteem and social needs of the HIV–infected individual in the classroom Develop classroom strategies for the management of the HIV-infected student in the classroom Facilitate home instruction for HIV-infected students during periods of absenteeism	In conjunction with the counselor, develop specific programming for referred individuals engaging in high risk behavior Facilitate AIDS individual's private physician's prescribed medical regimens Provide confidential and nonjudgmental referral for those seeking AIDS-related information or treatment	Identify and refer high risk students for intervention programming Develop adopted physical activity programs for the student with AIDS/HIV infection	In conjunction with the school nurse, develop specific programming for referred individuals engaging in high risk behaviors Develop crisis management procedures for students facced with AIDS-related issues in self, teachers or significant others such as: HIV positive test, death and dying, homophobia, homosexuality Coordinate referral networks between the school and community		Identify high risk populations within the community for specific programming Coordinate school and community referral and support networks Provide confidential & anonymous HIV testing & counseling at local, easily accessed clinics

(Continued on next page)

well as social, economic, behavioral, and environmental efforts.[37] Nelson[36] identified five health promotion strategies: policy mandates, instruction, direct intervention, facility modification, and role modeling. The extensive literature[15,28] supporting the influence of media on human behavior also should be considered when developing health promotion strategies.

Figure 3 contains examples for incorporating health promotion strategies in the context of resources available within schools and communities. The goal to expedite adoption of health-enhancing behavior by youth is reinforced through multiple interventions providing consistent, continuous messages via multiple channels (school, home, community, and media) and by multiple agents (parents, peers, and health and education professionals). The effectiveness of this multidisciplinary, multistrategy

Figure 3
AIDS Prevention Strategies
(Continued from previous page)

	Total School Environment	**Classroom Instruction**	**Health Services**	**Physical Education**	**Counseling**	**Worksite Health Promotion**	**Integrated School & Community**
	Superintendent Principals Administrators	Elementary Teachers Secondary Teachers Content Specialist & Librarians	Nurses	Coaches Trainers	Counselor Psychologist Social Worker	Staff	Parents Peers Community Members
Role Modeling/ Social Support	Model support for HIV-positive individuals	In conjunction with the counselor develop peer instruction programs targeting specific subpopulations Develop instructional sequences involving parents & community professionals Model support for HIV-positive individual	Refer students at risk to appropriate support networks Model support for HIV-positive individual Use proper infection control procedures	Refer students at risk to appropriate support network Model first aid/ infection control precautions for bleeding	Develop peer instruction programs targeting specific subpopulations Develop support groups for high risk students Develop support groups for students or significant other with AIDS or HIV-positive test	Develop support networks for HIV-positive faculty and staff	Coordinate support networks for HIV-positive & at risk students
Instruction	Institute an AIDS Awareness Week incorporating instruction in all content areas Institute incidental AIDS instruction during other appropriate health promotion observances Reinforce & support the implementation of instructional policies	Develop & implement sequential K-12 AIDS instruction into the comprehensive health education curriculum areas Integrate AIDS instruction into curriculum of other academic content areas Develop instructional strategies which promote awareness knowledge, decision making, behavior change & social action Coordinate extra-curricular AIDS instruction within school program Create independent learning centers which focus on AIDS Develop instructional strategies which incorporate an examination of social, ethnic, religious & cultural mores regarding critical AIDS issues Provide confidential and nonjudgmental information and support for psycho-social and psycho-sexual needs of students	Coordinate supplemental AIDS instruction Conduct inservice programs on the management of body fluids Serve as the liaison with public health workers in regard to HIV-positive/ AIDS management Facilitate updating coworkers on AIDS developments & infection control procedures Cooperate with health teachers & counselors in the development of an information exchange network between school & community	Use teachable moment to reinforce AIDS educational message 1) relation of physical fitness to healthy immune system 2) the necessity for following policy guidelines for injuries involving blood	Cooperate with the health teachers & nurses in the development of an informational exchange network between school & community Cooperate with health teachers & nurses in the development of parent training programs Provide supplemental AIDS instruction via guidance program Provide confidential counseling in regard to the psychosocial and psychosexual needs of students	Coordinate inservice programming which examines 1) AIDS from a personal & school-based perspective 2) AIDS policies & implementation procedures 3) AfrAIDS crisis management	School board develops proactive stand justifying AIDS instructional programming Develop programming for PTA which outlines rationale for policy Develop parent training programs in regard to AIDS issues Use the school as an information broker for dissemination of AIDS information Use the following community resources for instructional support public health dept local constituents of physicians, nurses, or social workers professional associations, and gay task forces Coordinate AIDS instructional programs among religious & youth serving organizations Organize youth performing arts groups to carry AIDS prevention messages Organize youth volunteers to serve in hospices

comprehensive school and community approach in AIDS prevention presented in Figure 3 is based in theoretical and research studies found in the educational and health literature.

Any one discipline within the school may be unfamiliar with the scope and complexity of variables associated with a particular condition and equally unaware of the potential of other professionals to intervene. A multidisciplinary team of special service providers (nurses, psychologists, and counselors) complements the instructional expertise of educators with expertise in behavioral management techniques, human relations, learning and development, personality, and psychopathology.[37] A coordinated pro-active health promotion model that focuses on prevention by an interdisciplinary team is critical. A systematic collaborative effort to identify health promotion needs, to plan prevention and intervention programs, and to coordinate preventive service delivery allows resources to be used synergistically.[39] Jason[40] contends one discipline acting alone cannot yield sufficient interventions, and that multiple disciplines must merge efforts and act in concern for effective interventions to occur.

The Value of a Multistrategy Intervention Program

Vincent et al[41] reported the success of a public health information and education intervention program designed to reduce unintended teen-age pregnancies. Educational messages were targeted at students, parents, teachers, religious leaders and practitioners, and community leaders. The program incorporated cognitive messages about reproductive anatomy, physiology, and contraception as well as emphasizing the development of decision-making, communication, and self-esteem enhancement skills. An evaluation comparing the intervention group with two similar control groups revealed a marked decline in the estimated pregnancy rate. Estimated pregnancy rate equals live births, plus fetal deaths, plus induced abortions per 1,000 female population. In the intervention group, the average estimated pregnancy rate of 60.6 at baseline declined to 25.1 two years later. Two control sites reported estimated pregnancy rate baselines of 66.8 and 52.9, respectively. Two year later, the respective estimated pregnancy rates were relatively unchanged at 52.4 and 58.3.

After conducting a national study of sexuality education programs, Zabin et al[42] found that unless education was combined with the provision of reproductive services, there was little likelihood of success. Zabin et al[43] reported on a program that provided students attending a junior and senior high school with sexuality and contraceptive education, individual and group counseling, and medical and contraceptive services at a special clinic located a few blocks from school. Educational and medical services were free. The program demonstrated significant changes in knowledge and behavior. Student participants experienced a 13% increase in pregnancies during the 16 months in which the study was conducted. Among nonprogram participants, the increase was 50%. A longitudinal analysis after 28 months revealed a 30.1% decline in pregnancy rate at participant schools, and a 57.6% increase in the schools with no pregnancy prevention program.

CONCLUSION

Developing a multidisciplinary, multi-intervention approach to school and community AIDS prevention programs implies rethinking the organization of resources that historically have remained untapped. AIDS programmers should consider all the factors that influence learning. In addition, the responsibility for developing quality AIDS education includes the obligation to consider the body of knowledge related to health behavior. Education literature clearly points in the direction of planning programs in all the learning domains and across Bloom's Taxonomy. Likewise, health education literature affirms the need to use social and environmental supports as well as instruction to promote the adoption of health-enhancing behavior.

School personnel should not attempt to confront this issue in isolation. Given the complexity of influencing adolescent sexual behavior, a multidisciplinary approach using multiple strategies is imperative. AIDS prevention involves a shared responsibility with collaborative programming using a variety of health promotion strategies to help adolescents develop the knowledge, skills, behavior, and support to avoid behaviors associated with transmission of the virus. Further, AIDS education programs should not be conducted as separate entities, but as part of comprehensive health education programs. A multidisciplinary, multistrategy, comprehensive health education program has the potential to address simultaneously the constellation of problems associated with adolescents—teen-age pregnancy, sexually transmitted diseases, and substance abuse.

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Research Papers

A Preliminary Study of Social Issues in AIDS Prevention Among Adolescents

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Ross MW, Caudle C, Taylor J: A preliminary study of social issues in AIDS prevention among adolescents. *Journal of School Health*. Vol. 59, No. 7, September 1989, pp. 308-311. Copyright, 1989. American School Health Association, P.O. Box 708, Kent, OH 44240. Reprinted with permission.

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ABSTRACT: Educational efforts to prevent the spread of AIDS require a combination of accurate information and the application of that information to personal behavior. In this preliminary study, a scale was developed to evaluate the social and interpersonal skills of adolescents in AIDS-related and non-AIDS-related interactions. The instrument was administered to 101 Australian students in grades 10 and 11 of an urban high school. Findings indicated ratings of AIDS related activities of the adolescents were not significantly different from their other social activities, suggesting levels of comfort and assertiveness among adolescents in AIDS-related activities can be modifed. Students felt most anxious about problems with sexually transmitted diseases or drug use, suggesting difficulty in dealing with the possible public disclosure of these stigmatized conditions. Data suggest both individual and group scores among adolescents may improve on the five dimensions of the scale following interventions to promote social and interpersonal skills designed to apply knowledge obtained from AIDS education. (J Sch Health 1989;9(7):308-311)

In the absence of a cure or vaccine, education provides the only means to prevent and control the spread of the Human Immunodeficiency Virus (HIV), the causative agent of AIDS. However, information alone is insufficient to change the risk behavior of target groups. According to Green et al,[1] health education must bridge the gap between information and education by motivating individuals to take the information and apply it. Providing information about modes of HIV transmission may be minimally effective since, as Kegeles et al[2] noted, the information does not appear to change at-risk behavior of adolescents in high-risk areas for HIV infection.

Behavior designed to reduce HIV transmission, such as condom use and alteration of sexual behaviors or frequency of sexual contact, are primarily social—they occur as part of interpersonal interactions. As such, they are subject to peer and normative pressures, and to difficulties of being assertive or open about behavior not frequently the subject of discussion, even among adolescents. Siegel[3] noted the necessity to reach adolescents before they are confronted with decisions regarding sexual intercourse. Cates[4] emphasized that classroom instruction must not be restricted to communication of information, but should include development of skills in decision-making aimed at risk reduction.

The issue of social assertiveness in AIDS preventive behavior was illustrated by Millan and Ross[5] who found that, among homosexually active adolescents, 26% had engaged in activities which placed them at risk for HIV infection due to lack of assertiveness and having unsafe sexual activities imposed on them. In adults, Ross[6] reported that an assertive personality style is associated with positive attitudes toward condom use. Evidence suggests education directed toward provision or enhancement of the ability to alter social and interpersonal behavior associated with HIV transmission probably will be more effective than information alone, since it will provide adolescents with social skills to put their knowledge into practice.

In reviewing instruments prior to designing this study, most instruments used previously were based on measuring level of knowledge rather than change in social skills or comfort in interpersonal interactions involving decisions in areas related to viral transmission of HIV. The purpose of this study was to develop a scale to evaluate such changes, and to determine what dimensions of social and interpersonal skills could be identified empirically.

Goals for the study were to obtain information on the perceived difficulty of AIDS-related interactions in comparison with selected non-AIDS-related interactions, to develop an instrument to assess levels of social skills with regard to such interactions, and to provide preliminary data on the dimensions of the instrument.

METHOD

Instrumentation

The designed instrument was based on the Scale for Interpersonal Behavior,[7,8] which uses a five-point Likert scale to assess how tense or anxious individuals feel being in a particular situation or performing a particular behavior. Instructions specified, "On a scale of one—five, indicate how tense or anxious you think you would feel in the following situations: (one = not at all, two = somewhat, three = rather, four = very, and five = extremely)."

Six items from this scale that addressed a range of interpersonal behaviors of varying difficulties were used as a comparison with the AIDS-related items (Table 1, items 1-6). The AIDS-related item pool was generated through discussions between the authors and colleagues (Table 1, items 7-33). Demographic items included age, gender, grade, whether respondents were sexually active (yes/no), and if yes, whether they had ever used a condom during sexual activity (yes/no). Questionnaires were completed anonymously.

Participants

One hundred one high school students in grades 10-11 completed the questionnaire during a health education class. The urban high school attended by the students is located in an area of low seroprevalence for HIV in a city of 1 million residents; the school has a predominantly white student population. Students had received one hour of AIDS health instruction during the previous year.

Students were instructed to place their completed questionnaires in an envelope, to seal the envelope, and to place the envelope in a box held by one of the authors. Responses were directly taken for coding; teachers had no contact with the completed questionnaires. The sample consisted of 49 males and 52 females ($\bar{X}$ age = 15.86; SD = 0.73) with 50 from grade 10 and 51 from grade 11.

Data Analysis

Analysis included calculation of mean and standard deviation for the 33 items to determine the degree of tension or anxiety associated with each. To determine dimensions of social and interpersonal behavior, a factor analysis with principal component analysis followed by varimax rotation of factors with eigenvalues > 1 was performed. To assess the interrelationship of factors, items were factor scored with items multiplied by loadings to obtain a scale score for each factor, and correlated using Pearson Product Moment Correlation coefficients.

RESULTS

Of the total sample, 29 (28.7%) indicated they were sexually active. Of these, seven (24.1%) indicated they had used a condom during intercourse. No significant differences occurred at the .05 level (two tailed) in sexual activity by grade or by gender. However, those sexually active were significantly older (t = 2.4, df= 99, $p < .05$). The data in Table 1 illustrates the degree of perceived tension or anxiety associated with AIDS-related interpersonal activities.

The rotated factor analysis extracted nine factors with eigenvalues >1, accounting for 72.6% of total variance. However, only five factors had more than three single-factor loadings, on that factor and no other, of > 0.30. Consequently, the matrix was rerotated by varimax rotation to obtain a five-factor solution, accounting for 57.1% of total variance. Table 2 contains the five dimensions obtained on factor analysis which illustrate the underlying structure of the questionnaire. All dimensions were unipolar.

Correlations between factor scores generally were moderate and significant, ranging from —0.11 to 0.49. Significant correlations included factor 1 with factor 3 (0.33, $p <$ .01); factor 2 with factor 3 (0.48, $p < .001$); factor 4 (0.23, $p <$ .05) and factor 5 (0.49, $p < .001$); factor 3 with factor 4 (0.25, $p < .01$); and factor 5 (0.36), $p < .001$); and factor 4 with factor 5 (0.28, $p < .01$). Means and standard deviations of factors and scores of males and females, those who were sexually active and those who were not, and those who had used a condom compared to those who had not, are presented in Table 3. Alpha coefficients for the five sector-scored scales were, respectively, 0.82, 0.84, 0.80, 0.83, and 0.83.

DISCUSSION

These data are preliminary because the sample was one of convenience and not representative of a population. The sample was less sexually experienced and used condoms less than a comparable San Francisco sample reported by Kegeles et al.[3] However, this sample resided in a low prevalence area for HIV infection which may account for lower condom use. Mean item scores might be lower in more sexually experienced samples or samples with higher condom use.

The mean degree of tension or anxiety involved in the AIDS-related interpersonal activities appears to cover the

Table 1
Perceived Tension or Anxiety Associated with AIDS-Related Interpersonal Activities

	Item	Mean ± SD
8	Carrying condoms in your wallet or handbag	2.05 ± 1.27
11	Starting a social conversation about condom use	2.08 ± 1.25
7	Thinking about condoms	2.09 ± 1.30
10	Talking in social conversation (started by someone else) about condom use	2.11 ± 1.22
3	Putting forward your opinion during a conversation with strangers	2.26 ± 1.15
2	Offering an opinion that differs from that of the person you are talking to	2.26 ± 1.29
12	Arguing with someone who makes derogatory comments about using condoms	2.28 ± 1.20
1	Starting a conversation with a stranger	2.36 ± 1.21
16	Telling someone who you know has multiple sex partners that you don't want to have sex with them	2.41 ± 1.38
14	Buying condoms off the shelf in a shop	2.45 ± 1.38
18	Telling close friends that you don't share needles	2.48 ± 1.78
17	Telling someone who you know uses intravenous drugs that you don't want to have sex with them	2.51 ± 1.41
32	Hugging a friend or family member who has the Human Immunodeficiency Virus (i.e. the AIDS virus) infection	2.53 ± 1.39
9	Asking a friend if you can borrow a condom	2.55 ± 1.50
29	Telling your girl/boyfriend, who you are thinking of having sex with, that you want to use condoms	2.58 ± 1.51
28	Telling a casual boy/girlfriend who wants to have sex that you don't want to have sex at present	2.60 ± 1.47
21	Telling your friend that you think you have a problem with intravenous drugs	2.60 ± 1.39
26	Phoning the STD/AIDS Hotline	2.62 ± 1.55
27	Telling a close girl/boyfriend who wants to have sex that you don't want to have sex at present	2.63 ± 1.43
15	Asking your boy/girlfriend about his/her previous sexual experience	2.63 ± 1.33
19	Turning down a "hit" because there are no clean needles	2.64 ± 1.87
5	Refusing a request made by someone you are fond of	2.64 ± 1.08
13	Going into a pharmacy and asking to buy condoms	2.64 ± 1.45
30	Refusing to have sex with your girl/boyfriend if they won't agree to use condoms	2.65 ± 1.53
31	Visiting a friend at home, who has the Human Immuno-deficiency Virus infection (ie. who carries the AIDS virus)	2.68 ± 1.50
33	Visiting a close friend, who is now an AIDS patient, in hospital	2.73 ± 1.48
4	Starting a conversation with a person you find attractive	3.00 ± 1.30
22	Seeking help for an intravenous drug problem from your school counsellor or a drug clinic	3.17 ± 1.39
6	Telling someone that you are fond of them	3.20 ± 1.30
20	Telling your parents that you think you have a problem with intravenous drugs	3.21 ± 1.49
25	Going to a clinic for an STD or AIDS test	3.32 ± 1.39
24	Telling your boy/girlfriend that you may have a sexually transmitted disease	3.53 ± 1.40
23	Telling your parents that you have a sexually transmitted disease	3.67 ± 1.42

spectrum of anxieties in the six non-AIDS related interpersonal behaviors, suggesting AIDS-related activities are not significantly quantitatively different from other social activities. This important finding suggests increasing comfort and assertiveness in AIDS-related activities lies within the potential skills range of adolescents, and hence are modifiable.

The most anxiety or tension-provoking activities relate to discussion of problems about sexually transmitted diseases or drug use with others, and suggest public disclosure of these potentially stigmatized conditions are perceived as most difficult. However, difficulty in associating with people known to be infected with HIV or AIDS also appears to provoke anxiety. Discussions about condom use and previous sexual experience with partners, at least in this sample, do not appear to be strongly anxiety-provoking, though with interventions designed to increase social skills in these areas and to increase comfort with such interpersonal activities, these scores have scope for significant decline.

Results of the factor analysis, while based on a sample with well over the minimum of > 2 cases per item as sug-

Table 2
Factor Structure of AIDS-Related Interpersonal Activities*

		Loading
Factor 1	**Condom Interaction**	
8	Carrying condoms in your wallet or handbag	.76
14	Buying condoms off the shelf in a shop	.73
13	Going into a pharmacy and asking to buy condoms	.72
9	Asking a friend if you can borrow a condom	.69
11	Starting a social conversation about condom use	.68
10	Talking in social conversation (started by someone else) about condom use	.63
5	Refusing a request made by someone you are fond of	.45
6	Telling someone that you are fond of them	.41
15	Asking your boy/girlfriend about his/her previous sexual experience	.34
Factor 2	**Sexual Negotiation**	
28	Telling a casual boy/girlfriend who wants to have sex that you don't want to have sex at present	.86
27	Telling a close girl/boyfriend who wants to have sex that you don't want to have sex at present	.84
29	Telling your girl/boyfriend, who you are thinking of having sex with, that you want to use condoms	.75
30	Refusing to have sex with your girl/boyfriend if they won't agree to use condoms	.62
12	Arguing with someone who makes derogatory comments about using condoms	.45
Factor 3	**Refusal of Risk Behaviors**	
19	Turning down a "hit" because there are no clean needles	.75
18	Telling close friends that you won't share needles	.75
16	Telling someone who you know has multiple sex partners that you don't want to have sex with them	.64
17	Telling someone who you know uses intravenous drugs that you don't want to have sex with them	.62
7	Thinking about condoms	.49
Factor 4	**Disclosure-Help Seeking**	
24	Telling your boy/girlfriend that you may have a sexually transmitted disease	.79
20	Telling your parents that you think you have a problem with intravenous drugs	.77
23	Telling your parents that you have a sexually transmitted disease	.75
22	Seeking help for an intravenous drug problem from your school counsellor or a drug clinic	.69
25	Going to a clinic for an STD or AIDS test	.67
21	Telling your friend that you think you have a problem with intravenous drugs	.61
26	Phoning the STD/AIDS Hotline	.56
Factor 5	**Contact with Infected People-Difficult Social Interactions**	
32	Hugging a friend or family member who has the Human Immunodeficiency Virus (i.e. the AIDS virus) infection	.75
33	Visiting a close friend, who is now an AIDS patient, in hospital	.74
31	Visiting a friend at home, who has the Human Immuno-deficiency Virus infection (ie. who carries the AIDS virus)	.67
2	Offering an opinion that differs from that of the person you are talking to	.59
4	Starting a conversation with a person you find attractive	.54
3	Putting forward your opinion during a conversation with strangers	.52
1	Starting a conversation with a stranger	.50

*A copy of the full rotated factor matrix is available from the first author gested by Kim and Mueller,[9] must be considered preliminary subject to replication in more diverse samples. These data demonstrate that clusters of items form sub-scales and are readily interpretable. The first dimension obtained, labelled the "Condom Interaction" factor, incorporates items relating to discussion and purchase of condoms, and the more difficult non AIDS-related social situations.

The second dimension, the "Sexual Negotiation" factor, contains items relating to refusal to have sex and use of condoms during sex, and discussions surrounding condoms. The third dimension, the "Refusal of Risk Behaviors" factor, contains items relating to refusal of behaviors which could place the individual at risk of HIV infection. The fourth dimension, the "Disclosure/Help-Seeking" factor, contains items relating to disclosure of difficulties and help-seeking behaviors. The fifth factor, the "Contact with Infected People-Difficult Social Interaction" factor, contains items relating to contact with HIV infected people and to difficult social interactions, suggesting fear of interactions with such individuals are anxiety provoking as are non-AIDS related social situations involving interactions with strangers.

All five factors have face validity, and are readily interpretable as coherent clusters of items which are responded to in a similar pattern by respondents. Given their apparent consistency and the reasonable number of items per factor, ranging from five—nine, it may be useful to conceptualize them as subscales. Factor scores intercorrelated moderately and generally significantly, suggesting a modest degree of overlap between the domains identified in the factor analysis. The scales did not appear to be affected by sexual activity or gender of respondent.

The combinations of AIDS-related and non-AIDS-related items in the same factors suggests items were rated in terms of their perceived social difficulty and degree of anxiety they provoked, rather than on content. This finding confirms that respondents were able to conceptualize situations in social, rather than just AIDS or non-AIDS terms.

Indirect predictive validity could not be tested due to the lack of variance in age of the sample and the small number of those who used condoms. However, the data presented suggest such validation and further validation on groups which have or have not had AIDS education, either social or information-based, may be worthwhile in confirming the utility of this instrument.

Table 3

Means (± Standard Deviations) of Factors Across Groups

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Gender: Male	14.4±4.9	8.6±3.6	8.1±4.3	15.9±5.1	10.9±3.5
Female	13.4±5.0	9.5±4.5	7.9±3.6	15.1±4.6	11.1±4.5
Sexually Active:					
Yes	13.7±4.5	8.3±3.7	8.9±4.5	16.4±5.1	12.3±4.1
No	13.9±5.1	9.5±4.2	7.6±3.7	15.0±4.7	10.5±3.9*
Used Condom:					
Yes	13.7±4.0	8.8±2.9	8.3±4.9	15.8±5.7	13.5±4.4
No	14.4±5.2	8.4±3.9	8.8±4.4	16.9±4.9	12.0±4.2
Age: < 16	13.6±5.3	8.7±4.1	7.6±3.7	14.6±4.8	10.3±3.9
> 16	14.5±5.0	9.4±4.0	8.3±4.2	16.3±4.7	11.8±4.0
Overall Mean	13.9±4.9	9.1±4.1	8.0±3.9	15.5±4.8	11.0±4.0

*p < .05

CONCLUSION

The data suggest a range of anxiety or tension responses among adolescents to social or interpersonal situations related to AIDS risk and related activities. Adequate scope exists to improve scores either at an individual or group level following interventions to promote social and interpersonal abilities to put into effect the knowledge gained from AIDS prevention programs. The emergence of five interpretable dimensions on the factor analysis, and the modest intercorrelations of factor scores, suggest the questionnaire should be formed into five subscales that would increase the opportunity to evaluate specific aspects of educational interventions designed to reduce the transmission of HIV.

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II. ADOLESCENT SEXUAL BEHAVIOR

Adolescent Sexual Behavior

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ABSTRACT: What is known about adolescent sexual behavior is reviewed. First, the onset of sexual behavior in the teenage years is considered as a function of cohort, gender, and ethnic differences. Omissions in the research on sexual behavior other than intercourse are highlighted. Possible biological, social, and social cognitive processes underlying teenage sexual behavior are then considered. Next, demographic trends in the use of contraceptives and antecedents of regular birth control use are reviewed. Finally, some of the successful program initiatives directed toward altering sexual and contraceptive practices are discussed, keeping in mind the importance and relative lack of well-designed and carefully evaluated programs.

The tension between sexuality as pleasure and sexuality as reproduction is probably a universal human condition. All societies attempt to manage sexuality in order to regulate fertility. This task is both necessary and difficult because sexual desire guarantees species perpetuation. Typically, efforts to control fertility and arousal emerge during puberty, as the child is transformed into a reproductively mature adult. Chaperonage, seclusion, brideprice, and residence with the bridegroom's family prepubertally are mechanisms in traditional societies for managing fertility prior to marriage. These practices have been linked to the economic value of the female reproductive potential in societies where high birth rates were necessary given agricultural work and childhood mortality (Paige, 1983). Today's concern over teenage sexuality also is often couched in political and economic terms, as evidenced by discussions of the societal and individual cost of teenage parenthood (the proportion of Aid to Families with Dependent Children payments going to families of young childbearers and the reduced prospects of employment and education for teenage mothers). As sexuality, marriage, and childbearing have become less closely linked during the last quarter century, societal strategies for regulating sexuality have been revised accordingly, which is the focus of this article. First, we take a brief historical tour of teenage sexual behavior as studied by social scientists, in order to highlight the sometimes glaring research omissions. Then we turn to what is known about fertility management, keeping in mind that other aspects of sexual behavior have been woefully understudied. The onset of sexual behavior is considered in light of historical, gender, and ethnic changes that have occurred in the last 20 years. Possible biological, social, and social cognitive processes underlying teenage sexual behavior are examined in an effort to go beyond a mere listing of known antecedents. This is followed by a look at patterns of contraceptive use and their antecedents, since fertility may be controlled by delaying the onset of intercourse or by practicing birth control. Finally, within the small universe of well-designed and carefully evaluated programs, successful initiatives directed toward altering sexual or contraceptive practices are examined.

SOCIAL SCIENCE AND THE STUDY OF TEENAGE SEXUAL BEHAVIOR

Perhaps the best known and most influential work on sexual behavior was conducted by Kinsey and his colleagues in the 1940s and 1950s (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953).

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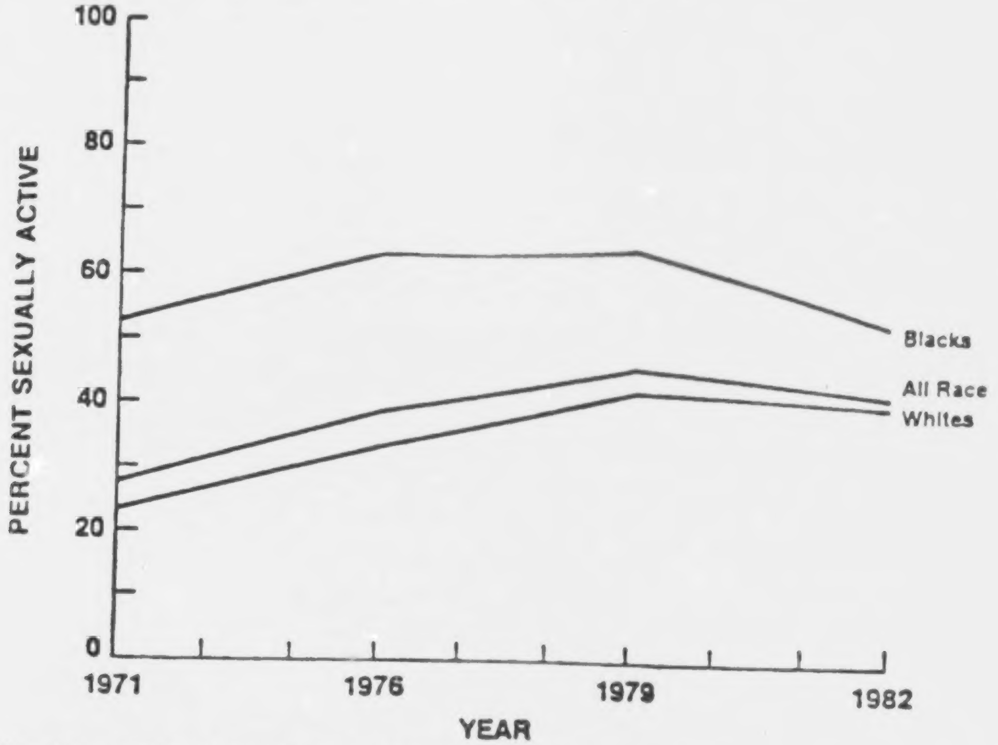
Figure 1
Sexual Activity of Adolescent girls Ages 15 Through 19, From 1971 to 1982



Note. Data are from "Sexual Activity. Contraceptive Use and Pregnancy Among Metropolitan Area Teenagers: 1971-1979" by M. Zelnik and J. F. Kantner, 1980. *Family Planning Perspectives, 12*(5), pp. 230-237, Copyright 1980 by Alan Guttmacher Institute, NY; "The Use of Family Planning Services by Sexually Active Teenagers" by W. F. Pratt and G. E. Hendershot, 1984, *Population Index, 50*(3), pp. 412-413, Copyright 1984 by Office of Population Research, Princeton University, Princeton, NJ; and *Risking the Future: Adolescent Sexuality, Pregnancy, and Childbearing* (Vol. 1, p. 41), edited by C. D. Hayes, 1987, Washington, DC: National Academy Press. Reprinted by permission.

Documenting increases in premarital intercourse since World War I led to speculation on the role of sex in mate selection. In the 1950s and 1960s, as Gagnon (1987) suggested, most studies were quite delicate in their handling of such topics, focusing on attitudes and, when behavior was the emphasis, on the age of first intercourse. A few exemplary studies (Gagnon & Simon, 1973; Jessor & Jessor, 1975, 1977; Reiss, 1960) in the late 1960s embedded sexuality in the adolescent experience, collecting data on other adolescent behavior.

However, subsequent research did not provide broader perspectives for the study of sexuality; nor did it provide theoretical models to explain sexual desires and behavior. One source of this limited vision can be traced to the rising concern about teenage fertility in the late 1960s and early 1970s. Given the increase in out-of-wedlock births and the decrease in age of intercourse, research focused almost solely on fertility control (sexual onset and contraceptive use). What sexuality means to adolescents, how it relates to other aspects of teenage life, and what strategies teens use to manage or incorporate it into their lives have not been studied in any detail. Particular specific research omissions (in both the adolescent and adult literature) include the following: (a) frequency of behaviors other than intercourse and variations in type and frequencies of sexual behavior by gender, ethnicity, age, social class, and sex of partner, (b) pubertal education aimed at boys on topics such as ejaculation and condom use (many young men today still learn about ejaculation from magazines, locker room jokes, or their first nocturnal emission; Gaddis & Brooks-Gunn, 1985); (c) same-sex preferences and behavior; (d) the relation of sexual behavior to other adolescent behavior and life events (as an exception, see Jessor & Jessor, 1977); (e) the meaning of eroticism in adolescents' sex lives; (f) the influence of social contexts (school and community environments) on the regulation and expression of social behaviors; (g) differences between younger and older adolescents in all of the above; and (h) comparisons of fertility regulation and onset of sexual activity in other cultures.

TRANSITION TO SEXUAL BEHAVIOR

Historical Trends

Perhaps reflective of our society's ambivalence about teenage sexuality, national survey data on ages of intercourse were not collected until 1971. Earlier estimates were based on selective samples, such as that of Kinsey. Dramatic increases in the number of teenage girls having intercourse have taken place in the last 50 years. In 1938 to 1950, approximately 7% of White females had intercourse by age 16 (Kinsey et al., 1948). By 1971, one third of never-married White girls 16 years of age had had intercourse, with the figure rising to 44% by 1982 (Hofferth & Hayes, 1987; Zelnik & Kantner, 1980). Trends have been carefully documented in the 1970s and 1980s. The proportion of all never-married girls ages 15 to 19 who have had intercourse is illustrated in Figure 1 by race and by time (1971 to 1982). Large increases occurred between 1971 and 1979, after which time the percentage of sexually active girls remained stable or perhaps even declined. Black girls had significantly higher rates of intercourse than White girls at all time points, although the difference had dropped to only 13% by 1982. Historically boys were much more likely to make their sexual debut as teenagers than girls. Estimates of selected samples from the 1940s to 1960s are that one third to two thirds of male teenagers were sexually active (Hofferth & Hayes, 1987). Data comparable to that just reported for teenage girls in the 1970s and 1980s do not exist for boys, perhaps reflective of the fact that fertility regulation is considered a female, not a male, issue. The rises in teenage sexual behavior are probably not as pronounced for boys as for girls, since many more of the former engaged in intercourse in previous decades. What has happened is that the gap between male and female teenagers narrowed as more and more girls became sexually active. Cumulative percentages using the National Longitudinal Survey of Youth by age of initiation, sex, and race in 1983 tell the story (Hofferth & Hayes, 1987). Sixty percent of White male teens had intercourse by age 18, and 60% of White girls just a year later, by age 19. Greater gender disparities are evident for Black teenagers: 60% of Black male teens had intercourse by age 16, and 60% of Black girls two years later, by age 18. Racial differences for boys are greatest at early adolescence. Indeed, in 1983, 42% of Black boys had had intercourse by age 15 or earlier; in some male subgroups, prepubertal initiation is common.

We have much less information on aspects of sexual behavior other than intercourse: Information on percentages of teenage girls who have had intercourse only once, frequency of intercourse, number of partners, and relationship with first partner is sparse. The little available information on the patterns of sexual activity suggests that many youth have intercourse only very occasionally when they initiate coitus. It is not uncommon for a teen to have first intercourse at age 14 or 15 and then not to have sexual relations again for a year or two. Age at intercourse may be a relatively poor proxy for risk of pregnancy under these circumstances.

Antecedents of Sexual Behavior

Most teens do not consciously plan to become sexually active, and they often do not foresee their first sexual experience. As such, it frequently is not experienced as a decision but rather as something that "happened" (Chilman, 1983). Studies on the antecedents of sexual activity in adolescence show that some but not all of the factors associated differ for Blacks and Whites and for boys and girls (see Hofferth & Hayes, 1987).

Biological perspectives. Of the biological changes associated with puberty, hormonal factors are thought to account in some part for the onset of sexual activity, either by effects occurring prenatally or activation effects that change hormonal levels at puberty. Hormonal activation may influence behavior directly by increasing arousal or indirectly by the social stimulus associated with physical change. The fact that levels of testosterone are associated with sexual activities in boys, independent of secondary sexual development, is evidence for a direct effect (Udry, Billy, Morris, Groff, & Raj, 1985). In girls, sexual interests, but not behavior, are associated with testosterone levels, suggesting that social factors may play a greater role in their coital behavior (Udry, Talbert & Morris, 1986). However, whether engagement in sexual intercourse increases androgen level or vice versa is not known.

In addition, contextual effects, if entered into the equation, might account for more of the variation in sexual activity than hormonal levels. Initiation of sexual behavior is highly associated with what is perceived as normative in one's peer group (Furstenberg, Moore, & Peterson, 1986), so it is likely that while very early sexual initiations may be in part hormonally mediated, by the time that behavior is normative, social factors may account for sexual initiation (see Gargiulo, Attie, Brooks-Gunn, & Warren, 1987, for a similar argument about dating behavior). Thus, even when hormonal effects are demonstrated, they must be evaluated relative to social factors before assuming direct or large hormonal-sexual behavior associations (Brooks-Gunn & Warren, 1989). Race differences in the initiation of intercourse prior to puberty also speak to the importance of social and contextual factors on sexual behavior.

The developing body acts as a stimulus for behavior change regardless of hormonal status. (No one-to-one correspondence exists between hormonal levels and secondary sexual characteristics.) For example, more physically mature girls seem to elicit more freedom from parents, perhaps making it more likely that they engage in dating and ultimately early sexual behavior. At the same time, pubertal children expect to be granted more autonomy in terms of friends and curfews than prepubertal children. Early-maturing girls are more likely to have older friends, which is associated with intercourse, smoking, and drinking (Brooks-Gunn, 1988; Magnusson, Strattin, & Allen, 1985). Such acts may in part explain associations between early maturation and intercourse beyond the potential influence of hormonal factors.

Parental influences. Parental influences on sexual behavior are believed to be strong, although research is surprisingly sparse (Ooms, 1981). Teens who rate perceived communication with their parents as poor more likely to initiate sex early; they also are likely to begin smoking and drinking early (Jessor & Jessor, 1977). Close relationships with parents as well as feelings of connectedness and supportiveness seem to be associated with later onset of intercourse (Inazu & Fox, 1980; Jessor & Jessor, 1977). However, as Hofferth and Hayes (1987) suggest, familial communication prior to first intercourse is usually not measured; nor are different aspects of communication, the age at which discussions occur, or the context in which it is embedded. Parents are often uncomfortable discussing sexual topics associated with reproduction with their postpubertal children, as are their children (the exception being mothers and daughters about menarche; Brooks-Gunn & Ruble, 1982). The cultural acceptance of sexuality in boys but not girls also may influence the nature of communication; for example, in one study, mother-daughter communication was associated with later intercourse, as was mother-son communication. However, sons' discussions with the father and earlier sexual activity were linked (Kahn, Smith, & Roberts, 1984). Fathers may condone sexual activity in their sons, given the sexual script of male potency. Parental supervision also is associated with later onset of intercourse. These associations are in part mediated by neighborhood influences as well as residence in single-parent household (Hogan & Kitagawa, 1985; Newcomer & Udry, 1987).

More process-oriented research directed at how parents may influence their teens sexual behavior is sorely needed. Several approaches may be profitable. Certain styles of family interaction enhance social cognitive abilities, such as role taking, decision making, and moral judgments (Cooper, Grotevant, & Condon, 1983). Ego development and autonomy also are associated with interaction styles characterized as enabling, authoritative and legitimating (Brooks-Gunn & Zahaykevich, in press, Grotevant & Cooper, 1986; Hauser et al., 1984). More autonomous adolescents who are able to consider situations from several perspectives and make well-mformed decisions may be more likely to delay the onset of sexual behavior or to use contraceptives more effectively. At the same time, the parental styles just mentioned may promote greater feelings of self-efficacy, which in turn could influence sexual behavior (Bandura, 1982; Strecher, McEvoy, Becker, & Rosenstock, 1986). Such premises await further testing.

Peer influences. As pointed out by Hofferth and Hayes (1987), beliefs about the importance of peers in the initiation of sexual behavior are much stronger than the actual research evidence. Perceptions about what one's peers are doing or what is normative in one's peer group are more strongly associated with sexual behavior than actual behavior, which is not frequently measured (Cvetkovich & Grote, 1980). Friendship choices may be predicated in part by sexual activity, at least for some subgroups. In addition, age may also mediate peer effects; it is thought that younger adolescents are more susceptible to peer pressure, although little research exists on this point.

Not surprisingly, early dating and early intercourse are associated. Of more interest are differences in sexual norms associated with precoital sexual activity, often seen in the context of dating. For example, White teenagers are more likely to engage in a predictable series of behaviors prior to first intercourse than are Black teenagers. Black girls, who are more likely to move from necking to intercourse without intermediate steps, may be less likely to be prepared for intercourse, in the sense that there is little time to think about and obtain contraceptives (Smith & Udry, 1985).

Academic perspectives. Teenagers who are not doing well in school and have lower educational aspirations are more likely to have sex during adolescence than those faring better in school (Hofferth & Hayes, 1987). School functioning itself is mediated by education, job, and welfare status of the mother (Furstenberg, Brooks-Gunn, & Morgan, 1987). It is no surprise, then, that children in poverty are clearly at risk for school failure and early sexuality.

It is important to place the association between academic failure and early sexuality into the context of the school experience, especially for young adolescents. Entrance into middle school is considered one of the most difficult educational transitions and often results in drops in academic performance (Hamburg, 1986). Providing suport for the transition to middle school, especially for vulnerable children, seems essential, both to avoid increases in school failure experiences and to promote health behaviors.

Social cognitive perspectives. Social cognitive abilities often associated with sexual decision making provide yet another and largely unexplored perspective for understanding sexual transitions among adolescents. We know that the abilities to integrate domain-specific knowledge into a coherent system, to understand the nature of social relationships, to consider the future, and to anticipate consequences of decisions all increase during adolescence (Damon & Hart, 1982; Harter, 1983). The sparse literature on social cognitive abilities and sexual behavior is illustrative. Using a Piagetian approach to study the understanding of "where babies come from," concrete operational responses give way to more formal operational ones during childhood and early adolescence: Formal operations are characteristic of the majority of 11 - to 12-year-olds, whereas they are rare in younger children (Bernstein & Cowan, 1975). In a cross-sectional study, North American adolescents were slower in attaining formal abilities related to "where babies come from" than their peers in England, Sweden, and Australia (Goldman & Goldman, 1982). These authors suggest that the North Americans are lagging because of the cultural context (teenage sexual activity being less acceptable in the United States than other Western countries) and education (sex education being later, less complete, and less accepted in the United States). Recently, four stages of reasoning about sexual behavior have been proposed following other cognitive developmental stage models. These stages are related to age and ego development during adolescence and young adulthood but not in late adulthood (Gfellner, 1986). Whether such reasoning is associated with sexual behavior has not been studied.

Other social cognitive processes might be applied to the study of teenage sexual behavior including self-definitions, self-efficacy, and social comparisons (Bandura, 1982; Higgins, Ruble, & Hartup, 1983). For example, at the time of menarche, girls construct a self-definition of what it means to be a mature, reproductive woman based on actual experiences, information seeking, and interactions with others (Brooks-Gunn, 1987).

CONTRACEPTIVE USE

Rates of sexual activity among teens in the United States are not notably higher than the rates in several countries in Western Europe. Yet, the incidence of adolescent pregnancy and childbearing in the United States, especially among younger teens, exceeds the level of most other industrialized nations (Jones et al., 1985; Westoff, Calot, & Foster, 1983). This is partly due to poor contraceptive use among American teenagers. Case studies by the Alan Guttmacher Institute suggest that American youth are exposed to mixed messages about contraception and that birth control services are not effectively delivered to the teenage population (Jones et al., 1985). When considering the difficulties adolescents have in using contraceptives, it is important to recognize that many American adults are poor contraceptive users as well. Indeed, the most widely used method of contraception among married adults in their 30s is sterilization (Bachrach, 1984; Jones et al., 1988). Presumably, mature adults resort to sterilization because they have many of the same apprehensions and problems with contraception that teenagers do.

INITIATING THE USE OF CONTRACEPTIVES

About one half of all teenagers do not use contraceptives the first time they have sexual relations (Zelnik & Shah, 1983). Younger adolescents are much less likely to use contraceptives than are older adolescents. In addition, more Whites than Blacks have used birth control methods during the first intercourse, although these racial differences largely disappear after controlling for age of initiation (Zelnik, Kantner, & Ford, 1981). Little comparable data on use of contraceptives by gender exist. In one study, more than half of the White teenage boys and almost three quarters of the Black teenage boys had not used a method of birth control during first intercourse: This compared to a little less than half of the White teenage girls and a little more than half of the Black teenage girls not having used contraception during the first intercourse (Zelnik & Shah, 1983).

Of those who use a method, male methods seem to be the overwhelming choice, as reported by both boys and girls, Blacks and Whites. For example, two thirds to three quarters of all White teenagers and Black teenage boys reported using a male method; in contrast, approximately 45% of Black girls reported using a male method, in that they were much more likely to use a female prescription method than the other three groups. In addition, among both boys and girls, those who planned first intercourse were much more likely to have used contraception than those who did not plan the first intercourse. Reasons for not having used a method at first intercourse were provided in this same survey. The reasons, in descending order of their being mentioned, were as follows: Intercourse was not planned, they did not know about intercourse, they did not want to use contraceptives, they did not think about using contraceptives, contraceptives were not available, and pregnancy was thought to be impossible. White teenagers were more likely than Black teenagers to state that contraception was not available, and more Black than White teenagers said that they did not know about contraception (Zelnik & Shah, 1983).

CONTRACEPTIVE USE AFTER SEXUAL INITIATION

Failure to use contraception the first time intercourse occurs is unfortunately not a one-time event. The percentage of teenagers who use birth control only occasionally or not at all is substantial. These delays have serious consequences. One half of all first pregnancies occur in the first six months following intercourse, and one fifth in the first month (Zabin, Kantner, & Zelnik, 1979). In a study of 1,200 teenagers attending a family planning clinic for the first time, one third came to the clinic because of a possible pregnancy, and 14% came prior to the initiation of intercourse. Of the remaining young women, only 8% found their way to the clinic within three months of sexual initiation (Zabin & Clark, 1981). However, three quarters of those coming to the clinic had used some form of contraception previously. Most conspicuous among the many reasons for not coming to a family planning clinic earlier were procrastination and ambivalence as well as fear that parents would find out. Many teens believed, incorrectly, that parental consent or notification was necessary for clinic attendance. Clearly, this finding has important implications for altering perceptions about clinics among sexually active teenagers. It also underscores the lack of communication between parents and children about matters associated with sexuality.

ANTECEDENTS OF GIRLS' CONTRACEPTIVE USE

Antecedents of contraceptive use have been studied extensively. The following is a brief summary of these findings (Chilman, 1986; Morrison, 1985). In general, the characteristics of early sexual initiation are similar to those for irregular contraceptive use. Irregular contraceptive use is associated with lower social class, nonattendance of college, and fundamentalist Protestant affiliation. Situational determinants include not having a steady partner, having never had been pregnant, infrequent intercourse, and no access to free confidential family planning. Familial correlates include little communication with parent, perceived troubled relationship with parent, and lack of knowledge of parents' contraceptive experience. Peer influences include having friends who become parents. Academically, low educational achievement and aspirations are associated with irregular contraceptive use. From a personality perspective, high levels of anxiety, low self-esteem, and feelings of fatalism, powerlessness and alienation are associated with poor contraceptive use.

Lack of knowledge about the safe time of the month also contributes to poor contraceptive use. However, we have little information about sexual knowledge and its relation to sexual behavior more generally. A few relevant surveys suggest that knowledge of contraception and abortion increases during adolescence, which is often attributed to education. However, taking a sex education course does not guarantee adequate knowledge (only one third of 15- to 18-year-olds were able to identify the cycle phase in which risk of pregnancy was the greatest; Zelnik & Kantner, 1977). It appears that knowledge is a necessary but insufficient determinant of effective contraceptive use.

The social cognitive perspective so relevant to understanding the onset of sexual behavior could be applied equally well to contraceptive use and unplanned pregnancy. Almost all girls report being surprised at finding themselves pregnant (Shah, Zelnik, & Kantner, 1975). What accounts for their surprise? Reasons include (a) the belief that they could not become pregnant because of cycle phase (although the majority of adolescents are unable to identify the time at which ovulation occurs); (b) the misperception that they did not have sex often enough, had used withdrawal, had not had an orgasm, or were too young; (c) even while knowing the risk, believing they would not get "caught"; and (d) procrastination or forgetting to use birth control, perhaps indicating a denial of personal responsibility for their behavior. Unfortunately, most of these studies surveyed only pregnant girls or girls obtaining a pregnancy test, so it is unclear whether these reasons constitute post hoc explanations or rationalizations. Furthermore, although contraceptive use has been attributed to self-insight and future orientation, this assumption has not been directly examined. Theoretical models for contraceptive use should include social cognitive and motivational processes (Morrison, 1985).

Male Contraceptive Use

We know very little about boys' attitudes about contraceptive use or distinguishing characteristics of regular and irregular contraceptive users. Approximately 40% of girls rely on male methods and therefore depend on the "vigilance" of their male partner. Like girls, boys know very little about reproduction, even the time during the menstrual cycle when conception is likeliest to occur. Boys also may be less knowledgeable about specific contraceptives and may have even more reservations about contraceptive use than girls.

Sexual Activity and Other Adolescent Behaviors

Teenage sexual activity and contraceptive use must be considered in light of other adolescent experiences. For example, teenage sexual behavior is generally associated with alcohol and drug use as well as declines in school achievement and interest. Adolescents may engage in such behaviors for many different reasons, including (a) efforts to achieve what seem to be unavailable goals, (b) a way of coping with personal frustrations and anticipated failure, (c) an expression of opposition to conventional society, and (d) membership in peers' subcultures (Hamburg, 1986; Jessor & Jessor, 1977). Just describing demographic trends in sexual behavior and antecedent factors does not offer much insight into why adolescents engage in sexual activity or other behaviors. Intervention effort have been hampered by the lack of research on the context in which sexuality occurs, the possible personal correlates of certain behavior panerns, and the interaction of the two. It is important to consider differences between older and younger adolescents' goals and motivations. For example, sexual behavior is more likely to be termed problem behavior for younger than older adolescents. Whether the motivations of young adolescents are different from those of older adolescents has not been studied. From a developmental perspective, it is not known whether early engagement in sexual behavior and other risk-taking behaviors truncates the process of adolescent development, making it less likely that these teens achieve autonomy and a healthy sense of self. However, it is clear that the young adolescent' life course trajectory might be more likely to be negatively affected by early engagement in sexual behavior, as reflected in school problems, early pregnancy, and poor job prospects, than the adolescent who has already completed high school. (For more discussion of these issues, see our companion article on pregnancy and childbearing in this issue.)

Sexually Transmitted Diseases

Adolescents are at high risk for sexually transmitted diseases (STD). Excluding homosexual men and prostitutes, female teenagers have the highest rates of gonorrhea, cytomegalovirus, chlamydia cervicitis, and pelvic inflamatory diseases of any age group (Cates & Rauh, 1985; Mosher, 1985). Risk factors for STDs include early age of intercourse and no or irregular contraceptive use. Of pressing concern is the incidence of the acquired immune deficiency syndrome (AIDS). Although few adolescents have been reported to have AIDS, the numbers have been doubling in recent years. In addition, one fifth of all cases have occurred in 20- to 29-year-olds, and the virus has a long incubation period, suggesting that many of these cases may have originated in the late adolescent years (Curran et al., 1988). If the proportion of reported cases increases in the heterosexual population, as many expect it will, adolescents may be at relatively high risk for infection, given their current rates of other STDs and their contraceptive histories (Brooks-Gunn, Boyer, & Hein, 1988). Educational programs about STDs generally and AIDS in particular are becoming more commonplace in school sex educational programs. In a recent national survey by Harris, virtually all parents wanted AIDS education in the schools (Meade, 1988). Many of the preventative strategies discussed in the next section could be tailored to include behavioral interventions aimed at reducing the incidence of STDs and AIDS by increasing the use of condoms, advocating the practice of less risky sexual behaviors, reducing the use of intravenous drugs, and minimizing the sharing of needles among intravenous drug users. These are behavior changes advocated for adult as well as for adolescent (Koop, 1988; see review of adolescent AIDS by Brooks-Gunn et al., 1988).

Prevention Strategies

Several preventative strategies have been proposed and implemented: offering access to contraception, providing knowledge about sexuality and contraception, announcing sexual attitudes, and enhancing life options (Dryfoos, 1984). The majority of programs offer services (family planning) or knowledge (sex education); fewer attempt to change motivational constructs such as strengthening competing goals (school achievement), providing alternative means of achieving goals (intimacy without sexual behavior or with regular contraceptive use), or altering peer group norms (making early sexual activity less desirable; Hamburg, 1986). What follows is a very brief review of some of the preventative strategies currently being used. (See Hofferth & Hayes, 1987, for a more complete discussion, especially of interventions that have not been systematically evaluated or are currently being evaluated, such as programs to delay first intercourse or abstain from sexual activity.) Family life and sex education, media programs, family planning services, and school-based clinic programs are reviewed. Other approach using more specific social psychological principles include decision making, peer counseling, peer resistance training, behavioral skills training, and decreases in risk-taking behavior generally (Botvin, 1986; Perry, 1984). Systematic application of such approaches to sexual behavior is rare. Most prevention strategies focus on females.

Family Life and Sex Education

The primary purpose of family life and sex education is to provide information about human reproduction and, increasingly, about contraceptive use. Once believed to be exclusively in the province of the family, responsibility for sex education has shifted in part to the school. A vast majority of parents, other adults, and adolescents support sex education in the schools (Norman & Harris, 1981). In the early 1980s, three quarters of all school districts provided some sex education and three quarters of adolescents in national surveys reported having had some sex education (Zelnik & Kim, 1982). Only one state currently prohibits instruction on reproductive topics. However, the timing, extensiveness, and intensiveness of sex education programs are widely divergent. Almost all school districts include decision making about sexual behavior as a goal of their sex education programs. Three quarters include reproductive knowledge, and a scant one quarter include reduction of sexual activity and teenage childbearing as goals. Most programs are short (10 hr or less), and perhaps less than 10% of all students have taken comprehensive programs (40 hr or more; Kirby, 1984). Elementary school programs seem to be rare, although pubertal education is provided in many fifth and sixth grades (no systematic review of these programs exists). Junior high school programs focus on puberty, reproduction, and dating, but typically not on contraception. High school coverage is more inclusive: Three quarters of all programs include family planning, contraceptive methods, and abortion, and one half include masturbation and homosexuality as topics (Hofferth & Hayes, 1987; Orr, 1982). Several tests of the efficacy of sex education have been performed in recent years. Generally knowledge about reproduction increases after such programs, especially in younger adolescents. Of more interest is whether such programs alter behavior. The fear that sex education would promote early sexuality is largely unfounded (Furstenberg et al., 1986; Zelnik & Kim, 1982). Such programs may promote contraceptive use among sexually active teens, but evidence is mixed (Kirby, 1984). Because sex education is part of the adolescent experience in the United States today, it is clear that more evaluation is needed as well as design of new approaches. Peer counseling and parent-adolescent communication programs have been developed, although little is known about their effectiveness.

School-based clinics. Such clinics are perhaps the most major programmatic effort, and the most hotly debated one, to be initiated in the 1970s and 1980s. In the most well-known program in St. Paul, Minnesota, fertility rates dropped from 79 per thousand to 26 per thousand from 1973 to 1984; continuation rate for contraceptive use was high (more than 80% over a two-year period); dropout rates for girls with babies dropped from 40% to 10% from 1973 to 1976-1977 (Edwards, Steinman, Arnold, & Hakanson, 1980). Another innovative program has recently been evaluated in Baltimore, where a health clinic was opened adjacent to a junior high and a high school. Using a pre-post, comparison-treatment design, first intercourse was delayed by seven months for girls who were exposed to the program for three years, clinic attendance increased for girls prior to first intercourse, and many boys attended. Most impressive, conceptions dropped in the program schools during the three-year period while increasing in the comparison schools (Zabin, Hirsch, Smith, Strett, & Hardy, 1986). However, not all program evaluations have yielded such positive results.

Media

Information provided in the media is a way to reach almost all teens and their families. However, television executives have been hesitant to address issues related to sexual behavior and contraceptive use in regular programming and in advertisements. Public health messages and advertisements about sexuality and contraception also do not make their way into the major networks with any frequency. In 1985, the three major networks refused to place public service announcements on teenage pregnancy, although they have done so subsequently with no negative public response. In 1987, all three networks rejected a public education message about oral contreseptive use as too controversial. In 1988, even though public health service messages on condom use to prevent AIDS were aired, network executives state that they would turn down identical advertisements by condom manufacturers; public service announcements on contraceptives not linked to disease prevention are still not being aired by the three major networks (although a few local stations do so).

Family Planning Services

Family planning services play a major role in teenagers' fertility regulation, especially since three quarters of teenage girls using contraception use prescription methods (primarily oral contraceptives). One half of all teenage girls obtaining services use family planning clinics and one half use private physicians. A disproportionate number of clinic users are young, Black, and poor (Pratt & Hendershot, 1984). About two thirds of family planning clinics' funds are provided through federal grants (Title X, Maternal and Child Health Grants, Medicare Funds, and State Block Grants). Issues under study include how to encourage regular scheduled visits, how to decrease the time between first intercourse and first clinic visits, and how effective family planning clinics have been in reducing unwanted pregnancies. Little effort is directed toward bringing male teenagers into the system; for example, less than 1% of all patients served by family planning clinics are male.

CONCLUSION

In 1987, the National Academy of Sciences Panel on Early Childbearing recommended that the rate and incidence of unintended pregnancy among adolescent be reduced. Recommended programs included ones to enhance life options (school performance, role models, and employment opportunities), delay sexual initiation, and encourage contraception after the sexual debut. The panel urged that sex education include sections on contraceptive use, decision making, and assertiveness training; that medical and community services work together to provide integrative, continuous services; that the media be discouraged from glorifying sex; that the media be encouraged to promote contraceptive advertising; and that more school-based clinics be designed and evaluated (Hayes, 1987). Many of these policy initiatives have been suggested before or are being attempted in select communities, but no large-scale efforts have been undertaken yet. Perhaps ironically, directing research to girls' fertility, although arising from what is clearly an important policy issue, may have made it difficult to design effective interventions; that is, in the absence of data on the meaning and frequency of different sexual behaviors, program development occurs in what seems to be a social science vacuum. Often untested assumptions have driven program initiatives, some of which have turned out to be good bets and others unfortunate guesses. Our lack of knowledge is all the more distressing given the haunting specter of AIDS and the rapid rise of STDs in adolescents. How do we alter sexual practices among homosexual teenagers or in intravenous drug users (the two groups at greatest risk for AIDS) if we do not know how many there are, where they are located, or what their current sexual practices are? How might teens be encouraged to use condoms (the most effective protection against human immunodeficiency virus infection known today) when almost no information exists as to how teens initiate sexual activity, how they view and use the condom, what they know about proper use of the condom, how they discuss condom use with a partner, and so on? Clearly, we are limited in what may be said about every aspect of sexuality except fertility control, specific age of intercourse onset and (girls') contraceptive use. Although a critical concern, in that teenage parenthood extracts a cost to the young mother, the young father, and their children (see our companion piece in this issue, Furstenber, Brooks-Gunn, & Chase-Lansdale, pp. 313-320), other concerns are not addressed by social scientists generally or psychologists in particular.

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Research Papers

Self-efficacy and AIDS Prevention for Pregnant Teens

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Lawrence L, Levy SR, Rubinson L: Self-efficacy and AIDS prevention for pregnant teens. Journal of School Health. Vol. 60, No. 1, January 1990, pp. 19-24. Copyright, 1990. American School Health Association, P.O. Box 708, Kent, OH 44240. Reprinted with permission.

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ABSTRACT: AIDS education, the only immediate solution to containment of AIDS, encourages active risk reduction among high-risk populations. Self-efficacy is a construct that can measure the likelihood preventive behaviors will be performed, and thus could be applied to identify specific areas where AIDS education should be augmented. In this study, pregnant, mostly black, teens (N = 58) attending an alternative school in a large, midwestern city completed a self-efficacy scale to identify self-perceived areas of vulnerability to participating in preventive behaviors and avoiding high-risk behaviors concerning AIDS. The AIDS Self-efficacy Scale identified four areas of greatest vulnerability: using condoms, discussing previous homosexual activity, discussing previous bisexual activity, and telling a partner about an experience with a bisexual. The last three situations result from an inability to discuss a partner's past sexual history, indicating a need to be very specific in these areas. School health interventions should recognize and deal with issues sexually active teens have identified as most difficult, particularly specific aspects of sexual histories, and provide these adolescents with prevention skills necessary to reduce high-risk behaviors. (J Sch Health 1990;60(1):19-24)

First identified in 1981, AIDS has since become a national health crisis for which a major effective solution appears to be containment of the AIDS-causing human immunodeficiency virus (HIV) through various modes of prevention, including education. AIDS education, particularly for adolescents; provides correct information and encourages practicing risk-reduction behaviors that prevent transmission of HIV. Self-efficacy, a construct that influences the likelihood that AIDS risk preventive behaviors will be performed, helps identify specific areas where AIDS education needs to be augmented.

AIDS represents a serious health threat for adolescents. The Centers for Disease Control reported 21% of known AIDS cases were in the 21-29 year age group.[1] Since the average latency period is about one to five years or more, most of these people were exposed to HIV as teens, either through sexual contact, IV drug use, or both behaviors.[1]

Some activities youth experiment with during adolescence put them at high risk for contracting AIDS.[2] Youth with a history of sexually transmitted disease, prostitution, and IV drug use are at particularly high risk for acquiring AIDS. Strunin et al[3] reported that 70% of adolescents in their sample were sexually active, but only 15% acknowledged any change in sexual behavior due to the danger of contracting AIDS. Of those reporting a behavior change, only 20% used effective prevention methods. Kegeles et al[4] studied changes in teens' perceptions and use of condoms after intensive education. Perceptions surrounding the effectiveness of condoms to prevent disease transmission were high, but no increase in the use or intention to use condoms occurred. Kegeles and colleagues concluded knowledge alone was insufficient to convince teens they were vulnerable for contracting AIDS from a sexual partner.

Adolescents' perceptions of invincibility may inflate their risk of HIV transmission, especially when combined with their misconceptions and misinformation about AIDS. Chilman[5] found sexually active adolescent females who did not use birth control tended to take risks and to deal with anxiety by denying possible dangers. A comparison of the DiClemente et al[6] and Strunin et al[3] findings revealed an increase in the percentage of adolescents, from 34% to 54%, who did not fear getting AIDS. This difference may suggest the notion of "it can't happen to me," and the prevalence of misinformation among adolescents could have a synergistic effect on their perception of susceptibility to AIDS.

AIDS knowledge surveys of adolescents have been mildly encouraging. Studies[7] found adolescents generally were knowledgeable about how AIDS is transmitted, but they retain some important misconceptions.[3,6,8] Evidence suggests increased knowledge, but less progress in changing risk behavior among adolescents.[9] According to an Office of Technology and Assessment Study Paper,[7] the threat of AIDS is not sufficient to change the behavior of sexually active students.

While the typical adolescent lifestyle renders many at risk, minority groups are at greater risk than others, as reflected in the disproportionately high number of minority heterosexual AIDS cases compared to the proportion of minorities in the population. Most women with AIDS are of ethnic minority background,[10] and DiClemente et al[6] indicated minority teens are at greater risk than white teens for having misconceptions about AIDS. Relatively few studies have involved black and Hispanic youth, but in their studies DiClemente and colleagues found the two minorities to be less knowledgeable than whites concerning transmission of AIDS.[6,8] They found significant ethnic differences among black, Latino, and white adolescents in knowledge, attitudes, misconceptions, and perceived risk concerning AIDS.[6] The differences also promoted greater stress and anxiety.

Among the many behavior change models, Flay et al[11] have proposed an integration of several theories. Part of their model suggests behavior change does not automatically follow from information provided. They contend several intervening variables need to be addressed before behavior change is likely to occur. These variables include values, decision-making, skills training, and behavior reinforcement. Flay and colleagues suggest that intentions to perform behaviors will only be actualized if the subject has the self-efficacy and available behavioral alternatives.

According to Bandura's theory, perceived self-efficacy is an important mediating factor between knowledge and behavior.[12-14] The self-efficacy construct measures a person's self-perceived capability of performing a specific behavior. Therefore, if a person's self-perceived self-efficacy could be measured, future behavior might be predicted more accurately.

Studies using self-efficacy to predict health-related behavior indicate that, even if motivated to perform a behavior, people's perceptions of their ability to do so are important indicators of the likelihood they will perform that behavior.[15-17] Respondents must make a judgment about their capability of performing a specific future behavior. This judgment involves cognitive knowledge, skills, past performance, and attitudes toward the behavior.

Self-efficacy provides a useful measure of the pregnant adolescent's perceived abilities to participate in both HIV preventive behaviors and in risky behaviors that may result in contracting AIDS. The diagnostic value of a self-efficacy scale lies in its capacity to target specific behaviors assessed by respondents as areas where they do not perceive themselves as capable of behavior performance. For this paper, these target behaviors were considered as areas of vulnerability. Identification of specific behaviors in areas of vulnerability will permit educators to address these issues and to develop specific prevention skills in AIDS education.

The self-perceived ability of pregnant teens to participate in preventive behavior and avoid risk behavior surrounding contraction of AIDS was studied. Since teens are most likely to contract AIDS through high-risk behaviors—sexual contact, IV drug use, or both—the self-efficacy variables of greatest potential likelihood to reduce AIDS transmission include the ability and intention to use condoms for sexual interactions, the ability to assess their own sexual histories, the ability to determine their partners' sexual histories, teens' own drug-related practices, and the ability to determine drug practices of their sex partners.

METHOD

Subjects

Subjects for the study were predominately minority, pregnant teens newly registered, in a one-month time period, at an alternative school in a large midwestern city. The alternative school is a special public school for pregnant teens. The demographic distribution was representative of the entire school. Information was obtained at intake by the regular school social worker, and the AIDS Self-efficacy Scale became part of the school's regular intake procedure. The authors had no access to individual raw data; all information was provided as group data to ensure complete confidentiality. The teens were sexually active, at least on one occasion did not practice safe sex, and were at risk for contracting AIDS and other sexually transmitted diseases.

Demographic information revealed the racial distribution of the sample was 77% black, and 9% Hispanic. Average age was 16.5 years, with the range of 15 to 19 years; only one subject was 19 years old. Fathers of the unborn were, on average, four years older than the subjects, another indicator of vulnerability. Few fathers were younger than the pregnant teens, so the age difference for many of the girls was greater than four years. Their relatively young ages placed the teens under considerable pressure to act out "older" sexual roles without the maturity to resist adult manipulation. Due to the significant age differences, fathers, by virtue of their age, had more opportunity for sexual activity and drug behavior than the girls. This factor placed the girls at greater risk for AIDS.

Instrumentation

The AIDS Self-Efficacy Scale was developed to assess teens' perceived self-efficacy to engage in AIDS prevention behavior. Such prevention and risk-reduction behavior included the ability to obtain and use condoms, assess the sexual history of partners, limit the number of sexual partners, and recognize dangerous drug use, including alcohol. Figure 1 contains the self-efficacy Scale items.

The AIDS Awareness Test, developed by Louis Harris and Associates and the Metropolitan Life Insurance Co. for a nationally syndicated television program,[18] was administered to students at intake to ascertain their knowledge level about AIDS relative to other teens and the national population. This procedure was done to determine if subjects were substantially different in knowledge from expected national data so results from the scale could not be attributed to lack of knowledge. Because no individual data were available, group data were investigated. No individual lack of knowledge was identified. The AIDS Awareness Test contained 55 items concerning transmission, contagion, and symptoms of AIDS. Test information was current at the time of administration.

Procedures

The AIDS Self-efficacy Scale and AIDS Awareness Test were administered to the subjects at their regular intake sessions. Sixteen girls took a retest within two weeks. The two-week retest interval established the stability of the AIDS Self-efficacy Scale. The retest group was a convenience sample of students who kept their appointments with their case workers. These girls were considered representative of the 58, as compliance with appointments exceeds 90% throughout the program. Analyses of data consisted of descriptive statistics and of group comparisons to assess the potential vulnerability of this at-risk sample and to determine stability of the scale.

RESULTS

Three expert health educators and a senior social worker for the adolescent pregnancy program determined content validity of the AIDS Self-efficacy Scale. Response distributions for the scale are in Table 1. Inspection of the frequency of response for each item revealed two items relating to IV drug use had a relatively low response rate. Items 9 and 14, which concerned using needles for IV drugs, were deemed irrelevant in this group since there was no indication of any IV drug use. They were omitted from later analyses.

Stability about the mean for items was determined by test-retest scale scores. Due to confidentiality constraints, respondents could not be identified individually, thus mean scores for the test and retest groups were compared. Table 2 contains a comparison of means for each self-efficacy item. Means for all items showed no significant change between test and retest, using the t-test at the 0.05 significance level, thus indicating stability about the mean for the AIDS Self-efficacy Scale.

To clarify the most relevant concerns of these pregnant adolescents, items were ordered by mean response. The ordered list of items is in Table 3, with the greater means indicating higher self-efficacy and perceived ability to perform preventive behaviors. The lesser means indicated greater vulnerability or perceived inability to perform protective behaviors against AIDS. Areas of greatest perceived competence, the first four items were means ranging from 3.81 to 3.95, pertained to drug use and multiple partner sex practices. These behaviors were atypical for this group of adolescents. The high level of capability perceived here may reflect the perceived unlikelihood of participating in such behaviors for these teens. While they are serially monogamous and do not use drugs, they perceive their partners to be likewise, an assumption that was unconfirmed.

Areas of highest vulnerability (lowest means: 1.53 and 2.14) involved homosexual and bisexual activity, using a condom with someone who has had sex with a man, and telling a partner about a sexual experience with a bisexual. Data from this sample suggests these behaviors may be seen as inappropriate or unlikely for them or their partners. Actual partner behaviors are unsubstantiated. Other areas of high vulnerability (means 2.36 to 2.69), as per-

Figure 1

Self-Efficacy Scale for AIDS

1) Could you ask a sex partner how many people they had ever sex with before you?
2) Could you ask your sex partner to use a rubber?
3) Do you drink alcohol to help you enjoy sex?
4) Could you tell a sex partner how many people you had been with before him/her?
5) Could you use a rubber with a new sex partner?
6) Could you use drugs to make sex better?
7) Could you ask a sex partner if he/she has had anal sex?
8) Could you buy or get rubbers?
9) Could you use a new needle each time you mainlined?
10) Could you carry rubbers in case you decided to have sex?
11) Could you have sex with more than one person in the same week?
12) Could you have sex with someone who had other regular sex partners?
13) Could you use a rubber for sex with someone who had been with a lot of people before you?
14) Could you share a needle for drugs with someone else?
15) Could you ask a sex partner if he has had sex with another man?
16) Could you ask a sex partner if he has had sex with a prostitute?
17) Could you tell a sex partner if you had had sex with someone who goes both ways (bisexual)?
18) Could you use a rubber with someone who has had sex with another man?

Table 1
Response Distribution (%) to Self-efficacy Items

Item	n	Always	Often	Sometimes	Never
1 Ask number prior partners	57	57.9	8.8	29.8	3.5
2 Ask partner to use condom	58	31.0	15.5	27.6	25.9
3 Drink alcohol to enjoy sex	58	1.7	0.0	13.8	84.5*
4 Tell number prior partners	57	43.9	10.5	29.8	15.8
5 Condom with new partner	57	63.2	8.8	10.5	17.5
6 Drugs to enjoy sex	57	1.8	0.0	8.8	89.5*
7 Ask about anal sex	58	27.6	15.5	22.4	34.5
8 Buy or get condoms	58	48.3	6.9	10.3	34.5
9 New needle for IV drugs	44	6.6	0.0	0.0	93.2*
10 Carry condoms	58	31.0	22.4	22.4	24.1
11 > 1 partners per week	58	1.7	0.0	0.0	98.3*
12 Non-monogamous partner	56	1.8	0.0	5.4	92.9*
13 Condom with non-monogamous	54	50.0	11.1	13.0	25.9
14 Share needle for IV drugs	45	0.0	0.0	0.0	100.0*
15 Ask prior homosexual event	55	40.0	5.5	25.5	29.1
16 Ask sex with prostitute	57	61.4	1.8	17.5	19.3
17 Tell bisexual experience	51	13.7	2.0	7.8	76.5
18 Condom: prior homosexual	50	36.0	2.0	2.0	60.0

*Score weights reversed for these items

Table 2
Comparison of Mean Values for Test-Retest Self-efficacy Items*

		Test			Retest	
Item	n	Mean	SD	n	Mean	SD
1	57	3.21	1.00	16	3.31	0.95
2	58	2.52	1.19	16	3.00	1.56
3	58	3.81	0.51	16	3.94	0.25
4	57	2.82	1.17	16	2.38	1.26
5	57	3.18	1.20	16	3.50	1.03
6	57	3.86	0.48	16	3.88	0.34
7	58	2.36	1.22	16	2.12	1.31
8	58	2.69	1.38	16	3.06	1.34
9	44	3.80	0.76	14	3.14	1.41
10	58	2.60	1.17	16	2.81	1.38
11	58	3.95	0.39	16	4.00	0.00
12	56	3.89	0.45	16	3.94	0.25
13	54	2.85	1.29	16	3.25	1.24
14	45	4.00	0.00	15	4.00	0.00
15	55	2.56	1.29	16	2.44	1.50
16	57	3.05	1.26	16	2.69	1.25
17	51	1.53	1.06	16	2.06	1.44
18	50	2.14	1.44	16	2.56	1.50

*All test-retest comparisons were nonsignificant using student's *t* test, at the 0.05 level

Table 3
Self-efficacy Items Ordered By Means

Item		Mean
11	Not have sex with more than one person in the same week	3.95
12	Not have sex with someone who has other regular sex partners	3.89
6	Use drugs to make sex better	3.86
3	Not drink alcohol to help you enjoy sex	3.81
1	Ask a partner how many people they had been sexual with	3.21
5	Use a rubber for sex with a new partner	3.18
16	Ask a partner if he had had sex with a prostitute	3.05
13	Use a rubber with someone who has had many partners	2.85
4	Tell a partner how many people you have been sexual with	2.82
8	Buy or get rubbers	2.69
10	Carry rubbers in case you decide to have sex	2.60
15	Ask a sex partner if he has had sex with a man	2.56
2	Ask your sex partner to use a rubber	2.52
7	Ask a sex partner if he had ever had anal sex	2.36
18	Use a rubber with some one who has had sex with a man	2.14
17	Tell a partner about a previous bisexual experience	1.53

Table 4
AIDS Awareness Test Comparison (% correct)

	Present Study	A	B	C
AIDS is caused by virus	72.4	60.3	86	
Mother with AIDS can deliver infected baby	82.1	85.7	97	
AIDS transmission by				
giving blood	37.0			38
sharing drug needle	69.2	81.1	98	
mosquitos	59.3		51	
sneezed on	76.9		67	
touching	100	67.9	87	
food, utensils	88.5	75.0	65	37
Person with AIDS can look and feel healthy	92.6		83	
AIDS has no cure	100	60.5	93	
No AIDS vaccine exists	59.3	25.3	76	

A) DiClemente RJ, Zorn J, Temoshok L. Adolescents and AIDS: A survey of knowledge, attitudes and beliefs about AIDS in San Francisco. *Am J Public Health* 1986;76(12):1443-1445.

B) Fitti JE. AIDS knowledge and attitudes for September 1988: provisional data from the National Health Interview statistics. Hyattsville, Md: National Center for Health Statistics. *Advance Data from Vital and Health Statistics*, no 164. US Dept of Health and Human Services publication no (PHS) 89-1989.

C) Strunin L, Hingson R. Acquired immunodeficiency syndrome and adolescents: Knowledge, beliefs, attitudes, and behaviors. *Pediatrics*. 1987;79(5):825-828.

ceived by these teens, include the inability to ask a sex partner if he has had anal sex, ask a partner to use a condom, ask a partner if he has had sex with a man, or buy and carry condoms themselves. Thus, these teens perceive themselves as having difficulty determining a sex partner's previous risk behaviors, and more importantly they are not comfortable with obtaining and using condoms for sexual intercourse.

Knowledge levels from the AIDS Awareness Test in Table 4 showed this group of pregnant teens scored higher than the national average in most areas[18] (Table 4). Therefore, general AIDS knowledge could not be construed to interfere with perceived self-efficacy in most areas. However, significant knowledge deficiencies were apparent. Only 82.8% of respondents knew AIDS is a contagious disease. Less than one-half (42.9%) knew AIDS could be transmitted more easily by anal intercourse than by oral or vaginal sex, while 39.3% thought vaginal intercourse was the most likely of the three modes of intercourse for transmission. Only 37% knew sexual abstinence was the only sure way to prevent the sexual transmission of AIDS, while more than one-half (55.6%) thought protected sex would totally assure them of preventing AIDS. While the primary purpose of the study was to identify perceived self-efficacy of AIDS preventive behavior by pregnant teens, knowledge differences found in the Harris survey require comment.

This group primarily was comprised of very young, black girls so it is possible that because of age and cultural prohibitions some of the sexual behaviors asked about are not part of their present experience or foreseen in the near future. It also is unclear how these girls interpreted phrases on the Harris Survey such as "protected sex." However, the procedure involved administering a known knowledge survey for baseline comparison purposes only, not as an inquiry into the validity of the survey itself. Therefore, these knowledge results should be interpreted cautiously.

Discussion

The AIDS Self-efficacy Scale produced important information pertaining to pregnant teens' perceptions of ability to perform AIDS prevention behaviors. The scale identified several areas of vulnerability or perceived inability to perform preventive behaviors for these high risk teens. Specific areas of vulnerability related to AIDS transmission must be determined to effectively prevent the spread of the disease through education. Moreover, self-efficacy is one means to measure the likelihood that behavior will be performed to reduce the risk of AIDS. Successful educational interventions with pregnant teens will need to identify and implement strategies aimed at appropriate vulnerable areas and preventive behavior to enhance low self-efficacy perceptions.

In the ordered list of self-efficacy items (Table 3), those with the lowest means indicate areas of greatest vulnerability for the sample. The two lowest items, involving previous sex with a bisexual and using a condom with a partner who had sex with a man, may result from perceptions these circumstances are unlikely for them or partners they would date. Thus, adolescents may be denying ever having to deal with them This response also could be interpreted as inability to deal with aspects of a partner's sexual history as they relate to the possibility of AIDS transmission.

The most relevant areas of vulnerability for these teens concerned asking sex partners about previous sexual experience and obtaining and asking sex partners about previous sexual experience and obtaining and using condoms. Such issues are difficult for adolescents to broach, particularly for pregnant teen-age girls, since high-risk activity already has resulted in pregnancy. Some communication skills training in tactfully, but confidently, addressing these situations is clearly important in educational interventions. Respondents should feel capable of dealing with these preventive behaviors, including using condoms and determining sexual exposure of partners, if they are to reduce the risk of contracting AIDS, as well as other negative health consequences.

However, the diversity of ethnic, racial, cultural, and religious factors that affect sexual behavior patterns must be considered. For instance, by tradition Hispanic women are expected to be modest and faithful virgins, and deviance from this normative expectation may severely jeopardize their relationships.[19] Teen-agers need help with specific decision-making and communication skills to address these concerns. Role playing may provide teens opportunities to practice how to say "no" to sex, how to refrain from sex when condoms are unavailable, how to discuss the danger of AIDS without offending sex partners, and how to insist on use of condoms when having sex, all within appropriate cultural contexts.

Listed items with the highest means indicated areas in which the adolescents feel most confident. The highest grouping of five behaviors related to drug use and multiple sexual partners. These behaviors are atypical for these particular adolescents, and the high levels of perceived capability may reflect a perceived unlikelihood of participating in such behaviors. For instance, if they are serially monogamous, do not use drugs, and tend to be nondrinkers, the first six items may not significantly affect the likelihood of contracting AIDS. Even if these assumptions are true for respondents, the corresponding behaviors in the sex partners are unconfirmed, further emphasizing the need for communication skills.

Results of the AIDS Awareness Test indicated the sample group had knowledge levels similar to the national average. While some selected comparisons for this age group were unavailable, these students generally were slightly more knowledgeable than the national population on items for which comparative data were available. This finding is consistent with the added exposure to AIDS information provided by schools and the media for this target audience. However, their lack of knowledge and misunderstandings in some areas increase their risk of contracting AIDS. Confusion exists about the relative risk of different modes of sexual transmission, such as anal versus oral and vaginal intercourse. Preventive approaches to sexual intercourse, such as use of latex condoms, also requires accurate information. Explicit sex education is essential to clarify these misconceptions to make responsible protective decisions to avoid AIDS transmission.

When comparing knowledge levels for this group with those found in other studies,[3,8,20] significant deficits were apparent. Table 4 contains comparative correct responses on selected similar items from several studies. In the subject group of pregnant teens, only 82.1% knew a mother with AIDS could deliver an infected baby. The National Health Interview Survey (NHIS)[20] found that 97% of 18-29 year olds answered correctly, while 85.7% of the DiClemente[8] adolescents knew the facts. Only 62.9% of students in this study knew AIDS could be transmitted through an IV drug needle, as compared to 81.1% and 98% in the DiClemente and NHIS groups, respectively.

More than one-third of respondents in this study, and that of Strunin and Hingson,[3] knew AIDS is not contracted from giving blood. All correspondents in this study knew no cure exists for AIDS, but only 59.3% knew no vaccine was available to protect against AIDS. However, this response was more than double the 25.3% found by DiClemente et al.[8] These studies reaffirm the notion that, despite increases in knowledge about AIDS among teens, misinformation and misconceptions are still prevalent, particularly related to modes of transmission and unavailability of any protective vaccine. As these teens resume sexual activity, these misconceptions are potentially dangerous.

Comparisons of selected items on the AIDS Awareness Test with similar items from other survey studies revealed this group lacked knowledge in several areas. For example, while all respondents knew no cure exists for AIDS, only 59% knew no vaccine was available to protect against AIDS. This finding indicates a lack of understanding about disease control and protection. Only 63% knew one could get AIDS from an IV drug needle, and this age range and socioeconomic group is at high risk for intravenous drug use. Awareness of this misinformation is important to ensure these knowledge gaps are addressed adequately in AIDS prevention education programs.

Conclusion

This study used a small, relatively homogeneous group of pregnant teens to apply a relevant self-efficacy scale for performing AIDS prevention behaviors. The sample was representative of a large (600 girls per year) adolescent pregnancy program and thus has some importance for educational planning for these at-risk girls. The diagnostic value of the AIDS Self-efficacy Scale lies in the capacity to target specific behaviors perceived by respondents as areas of low efficacy.

Findings from the study indicate vulnerability to AIDS for these teens, as determined by their perceived inability to perform various AIDS prevention behaviors. They highlight the importance of teaching adolescents communication skills related to sexual behavior. To ascertain the risk of possible transmission of AIDS, it is essential to share with a sex partner relevant information about previous drug and sexual activities. Most adolescents find these areas difficult to discuss, and require skills training in the area of sexual communication.

Students would benefit from practicing these skills with their peers, through role playing and decision-making exercises, to reduce discomfort and prepare them for situations requiring sensitive responses. Areas of particular concern include asking about a partner's sexual history, telling a sex partner about one's own sexual history, asking a partner to use a condom for sex, and acquiring condoms for possible use with a sex partner.

While the sample was a sexually active group, the findings indicated that if they are at high risk for AIDS it is more likely through their partners' sexual and drug behaviors, due to age differences and probably life experiences, than their own sexual activity. This sample tended to be relatively conservative and monogamous at this time in their lives. Their lack of knowledge about drug use, as well as their lower self-efficacy ratings put them at risk from possible future drug use and contraction of AIDS, as well as their expected continued sexual activity.

In terms of drug use, including alcohol, the findings indicated a need for further investigation. This population indicated practically no experience with IV drugs. However, no assessment can be rendered about their ability to make critical preventive behavior decisions while "impaired" by alcohol, marijuana, crack, etc. The ability to make preventive behavior decisions may be more important or equally important to the specific use of intravenous drugs.

The study also provided useful information about AIDS prevention education, and encouragement for further refinement of the AIDS Self-efficacy Scale to predict performance of preventive behaviors for AIDS. While educational programs in schools have improved adolescents knowledge, the impact on preventing initiation of risk behaviors is inconclusive.[4,6] Little evidence suggests increased knowledge has been translated into behavior changes that reduce the chances of transmitting AIDS. The study also corroborated the suggested use of a comprehensive behavior change model suggested by Flay et al,[11] in which a program that includes activities to promote alternative life skills, knowledge of risks, and training of social skills to deal with social influences may effectively reduce the onset of high-risk behaviors.

Effective educational interventions must recognize and deal with the embarrassment surrounding these sensitive issues, and provide adolescents with prevention skills related to sexuality and sexual expression as well as to provide accurate knowledge. Perceived self-efficacy is a useful diagnostic tool for identifying areas of perceived personal vulnerability and the likelihood of preventing that person from engaging in AIDS risk behaviors through their own efforts.

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III. SUBSTANCE ABUSE PROGRAMS

Substance Abuse Prevention Research: Recent Developments and Future Directions

Gilbert J. Botvin

Botvin GJ: Substance abuse prevention research: Recent developments and future directions. *Journal of School Health*. Vol. 56, No. 9, November 1986, pp. 369-374. Copyright, 1989. American School Health Association, P.O. Box 708, Kent, OH 44240. Reprinted with permission.

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Abstract: Substance abuse continues to be one of the most serious problems facing communities throughout the United States. Existing school-based prevention programs have produced disappointing results when carefully evaluated. However, promising research has been conducted during the past eight years with two new prevention models that focus on the psychosocial factors believed to promote substance abuse. One, the social influence model, is designed to increase adolescents' ability to resist social influences to smoke, drink, or use drugs. The other model, though also designed to increase adolescents' resistance to pro-substance use social influences, focuses primary attention on the development of an array of cognitive-behavioral personal and social skills. More than 20 research studies testing programs based on these two prevention models have demonstrated significant reductions in substance use. Though future research is clearly needed, the results of these studies provide considerable cause for optimism. (J Sch Health 1986;56(9):369-374)

Evidence from recent surveys suggests that substance use and abuse among adolescents has declined somewhat in the past few years. Still, most experts agree that the prevalence of substance abuse among adolescents in the U.S. is of epidemic proportions. Many teenagers begin using a variety of psychoactive substances each year, despite the fact that most are fully aware of the adverse health, social, and legal consequences of use. For some adolescents, use of one or more psychoactive substances may be discontinued after a brief period of experimentation. However, all too often the initiation of tobacco, alcohol, or drug use may lead to compulsive patterns of use characterized by both psychological and physiological dependence.

The treatment of substance abuse is both costly and difficult. Consequently, the idea of developing effective prevention programs holds considerable intrinsic appeal. Unfortunately, the goal of developing effective prevention approaches has been elusive. Traditional substance abuse prevention approaches have produced disappointing results. However, during the past few years health professionals have witnessed the development and testing of a new "generation" of school-based substance abuse prevention models. The progress made in the past few years provides considerable cause for optimism. These newer "psychosocial" approaches to substance abuse prevention differ from more traditional prevention strategies in that they are based on a more complete understanding of the fundamental causes of tobacco, alcohol, and drug use/abuse. The approaches are grounded in psychosocial theory and utilize well tested cognitive-behavior change techniques. Perhaps most important, the programs have been subjected to careful evaluation using increasingly rigorous research designs.

ETIOLOGIC FACTORS AND DEVELOPMENTAL PROGRESSION

The available evidence suggests that several psychosocial factors may play a role in the initiation of tobacco, alcohol, and drug use.[1] These include social, cognitive, attitudinal, personality, and developmental factors. Though psychosocial factors appear to be primarily responsible for initiating substance use, pharmacological factors become increasingly important in reinforcing and maintaining regular patterns of use.

Experimentation with one psychoactive substance frequently leads to experimentation with others. The sequence of experimentation and subsequent regular use of psychoactive substances observed in most individuals suggests a developmental progression leading from some substances to others.[2,3] Most individuals typically begin by using tobacco and alcohol, progressing to marijuana. Some individuals may progress to the use of depressants, stimulants, and psychedelics. Typically, the use of opiates appears toward the end of this progression.

TRADITIONAL PREVENTION APPROACHES

Until recently, the standard substance abuse prevention approaches involved either the presentation of factual information about the dangers of substance use or what has been referred to as "affective" education. Informational tobacco, alcohol, and drug education programs are based largely on the assumption that increased knowledge about these substances and the adverse consequences of their use would be an effective deterrent.[4] The second type of substance abuse prevention program, which has been widely applied, generally has involved "affective" or "humanistic" education. These programs are designed to enhance self-esteem and responsible decision-making as well as to enrich the personal and social development of students.[5] This material is generally taught through class discussion and a variety of experiential classroom activities.

Programs utilizing information-dissemination and fear-arousal approaches and those emphasizing affective education have proliferated for at least a decade and a half. Yet, it is abundantly clear from the existing literature that these approaches are not effective.[6-10] Evaluation studies have demonstrated that these approaches generally are able to increase knowledge relating to the negative consequences of substance use, and occasionally have had an impact on attitudes toward substance use. However, few programs have been able to demonstrate an impact on actual substance use behavior.

DEVELOPMENT OF PSYCHOSOCIAL PREVENTION APPROACHES

Substantial progress in the field of substance abuse prevention has occurred during the past few years. The first major breakthrough in substance abuse prevention was in cigarette smoking. Researchers focused on the prevention of adolescent cigarette smoking for several reasons. First, cigarette smoking is a major risk factor for chronic diseases such as coronary heart disease, cancer, and emphysema. Second, cigarette smoking is the most widespread form of drug dependence in society. Third, cigarette smoking occurs toward the very beginning of the developmental progression of substance use and consequently is regarded as a "gateway" substance. More recently, prevention programs initially developed to deter adolescent cigarette smoking are being applied to preventing use of other substances, most notably to alcohol and marijuana.

Recent reviews [11,12] indicate the most promising substance abuse prevention approaches available today are those that focus primary attention on the psychosocial factors promoting substance use initiation. These reviews not only highlight the evolution of the newer psychosocial approaches to substance abuse prevention over the past eight years and the various permutations tested, but also clearly demonstrate the growing sophistication and methodological rigor of the studies. These approaches focus exclusively or primarily on the social influences believed to promote substance use or focus on approaches designed to enhance personal and social competence by teaching broader skills for coping with life.

SOCIAL INFLUENCE APPROACHES

The development of smoking prevention strategies that focus on the social influences promoting cigarette smoking is based on the recognition that peer and family influences consistently play important roles in smoking initiation. Though not yet established empirically, media influences also appear to play an important role in influencing adolescents to begin smoking cigarettes. In general, the social influence approach to smoking prevention involves: 1) making students aware of the social influences to smoke that they might be exposed to; 2) teaching specific skills, such as refusal skills, with which to resist those influences; and 3) correcting misperceptions of social norms about smoking, such as making students aware of the fact that most adults and adolescents do not smoke.

Most research conducted with the social influence approach has been based on the pioneering work of Evans and colleagues.[13] An underlying assumption of Evans' prevention model was that students could effectively be "inoculated" against social influences to smoke by gradually exposing them to progressively more intense prosmoking social influences. Evans also attempted to provide students with specific tactics for resisting prosmoking social influences. This approach was based on the notion that students' resistance to social influences to smoke could be increased by making them aware of the types of influence and by providing them with an opportunity to develop counter-arguments for resisting the influences.

Other investigators elaborated on this model, placing more emphasis on actually training students to deal with both peer and media pressures to smoke cigarettes. With greater emphasis on social learning theory[14] these intervention strategies go beyond the basic psychological inoculation model developed by Evans. Two distinctive features of the expanded approaches are the use of peer leaders (either older or same-age) to deliver some or all the program and the use of role playing and social reinforcement techniques for teaching students skills for resisting offers to smoke cigarettes. Some studies also have included a public commitment component in which students were asked to publicly state that they would not smoke cigarettes in the future. Studies testing expanded variations on social influence approaches have been conducted by researchers in Northern California,[15-18] Minnesota,[19-22] Massachusetts,[23,24] Oregon,[25] Michigan,[26] and Southern California.[27] The social influence approach also was tested in studies conducted outside of the United States including Australia,[28] Canada,[29-31] North Karelia,[32] and Oslo.[33]

> ***". . . future research needs to address several issues related to large scale dissemination such as program acceptability, fidelity of implementation, and provider training . . . "***

Most research studies conducted with the social influence approach targeted junior high school students, generally beginning with seventh graders. Some studies included students as young as fifth and sixth graders, while other studies were aimed at high school students. The programs tested varied in length from as few as three or four sessions to as many as 11 or 12 sessions conducted during a two-year period. Considerable variation also exists among the individuals responsible for program implementation. Programs were implemented by college students, members of the research project staff, or classroom teachers.

All studies using a social influence approach demonstrated significant reductions in smoking behavior. Most prevention studies focused primarily on preventing the onset of cigarette smoking—that is, the transition from nonsmoking to smoking. The results reported generally range from reductions of 33% to 39% in the proportion of individuals beginning to smoke comparing the proportion of new smokers in the experimental group with that of the control group. Several studies demonstrated reductions in the of prevalence of cigarette smoking among the participating students both for experimental smoking (less than one cigarette per week) and for regular smoking (one or more cigarettes per week). In these studies, the impact of the prevalence of regular smoking ranged from reductions of 43% to 47%. The impact on the prevalence of experimental smoking has been somewhat more varied ranging from reductions of 29% to 67%. Follow-up studies found the presence of program effects for at least two years after the initial posttest; however, these effects seem to decay over time, suggesting the need for continual intervention throughout junior and, perhaps even, senior high school.

Investigators have generally not attempted to identify and focus on students who might be considered likely to become substance users/abusers. For the most part, it is difficult to determine the extent to which these prevention programs might have an impact on those individuals most likely to develop more extensive patterns of substance use. However, this issue was addressed in one study conducted by Best and associates.[29] In addition to evaluating the effectiveness of the prevention program for all students participating in the study, several social predictors of cigarette smoking, such as peer smoking, parent smoking, and sibling smoking, were used to determine the impact of the program on students identified as most likely to become cigarette smokers. In this case, the prevention program was found to be even more effective for students identified as being at high "social risk" for becoming a cigarette smoker than for other students in the sample, producing an 85% reduction in the proportion of nonsmokers becoming experimental smokers and a 100% reduction in the proportion becoming regular smokers.

Although as a group the social influence approaches have primarily been evaluated in terms of their impact on cigarette smoking, a study conducted by McAlister and colleagues[16] demonstrated an impact on alcohol and marijuana use. In addition, some studies demonstrated an impact on knowledge,[29] attitudes, beliefs, and social resistance skills.[34]

No firm conclusions can be drawn at this point concerning which program components are the most or the least important, or who are the most effective providers. Many studies have tested social influence approaches that include a public commitment component, yet the results of a study conducted by Hurd and his collaborators[19] suggest that this component may not contribute to the effectiveness of these programs. Most programs have used films or videotapes similar to those initially developed by Evans.[13] However, it is not yet clear what type of media material is the most effective or the extent to which it is necessary. Finally, little is known about the optimal age (grade) of intervention, program length, program structure, or the characteristics of the individuals who are the most influenced by these programs.

It is generally is assumed that peer leaders play an important role in the social influence approaches. Indeed, using same-age or older peer leaders is a feature evident in nearly all the social influence approaches. In general, evidence supports the use of peer leaders for this type of prevention strategy.[20,35] Still, one must be aware that although peer leaders have been used to varying degrees in these programs, they generally have been used mainly in an ancillary fashion rather than as primary program implementers. In most of the studies, the primary providers were either members of the research project staff or teachers. Peer-led programs may not be uniformly effective for all students. The results of one study suggest that while boys and girls may be equally affected by social influence programs when conducted by teachers, they may be differentially influenced by peer-led programs—

with girls being influenced more by peer-led programs than boys.[28]

PERSONAL AND SOCIAL SKILLS TRAINING APPROACHES

Research also has been conducted to test the efficacy of broader-based substance abuse prevention programs. In addition to including many components of the social influence approaches, a distinguishing feature of these programs is an emphasis on the acquisition of generic personal and social skills. The theoretical roots to these approaches are based largely in social learning theory[14] and problem behavior theory.[36] From this perspective, substance abuse is conceptualized as a socially learned, purposive, and functional behavior resulting from the interplay between social and personal factors. Substance use behavior, like other types of behavior, is learned through modeling and reinforcement and is influenced by personal factors such as cognition, attitudes, and beliefs. Research testing the effectiveness of generic personal and social skills training approaches to substance abuse prevention was conducted in New York,[37-42] Tennessee,[42] and Washington.[44-46]

The primary distinguishing feature of these approaches is that they typically include two or more of these components: 1) general problem-solving and decision-making skills such as brainstorming and systematic decision-making techniques; 2) general cognitive skills for resisting interpersonal or media influences such as identifying persuasive advertising appeals and formulating counterarguments; 3) skills for increasing self-control and self-esteem such as self-instruction, self-reinforcement, goal setting, and principles of self-change; 4) adaptive coping strategies for relieving stress and anxiety through cognitive coping skills or behavioral relaxation techniques; 5) general interpersonal skills such as initiating social interactions, complimenting, and conversational skills; and 6) general assertive skills such as making requests, saying "no," and expressing feelings and opinions. These skills are taught using a combination of instruction, demonstration, feedback, reinforcement, behavioral rehearsal (practice during class), and extended practice through behavioral "homework" assignments.

The intent of programs using this prevention strategy is to teach relatively general skills for coping with life that will have a broad application rather than a situation-specific or problem-specific application. Where appropriate, however, these programs emphasize the application of general personal and social skills to situations related more directly to substance use/abuse, such as the application of general assertive skills to situations involving peer pressure to smoke, drink, or use drugs. Despite similarities in content, theory, and teaching methods, differences exist in the characteristics of the personal and social skills training prevention programs tested. The most common differences were the target age group, program length, frequency of sessions, providers, and whether booster sessions were included. Though most prevention studies conducted thus far with this approach have focused on seventh grade students, some studies were conducted with sixth grade students while others were completed with eighth, ninth, or tenth grade students. Program length ranges from as few as seven sessions to as many as 20 sessions. Some prevention programs were conducted at a rate of one class session each week, while others were conducted at a rate of two or more classes each week. All but two studies completed to date have used adult primary providers.[38,40] In some cases the adults were teachers, while in other cases they were outside health professionals such as project staff members, graduate students, and social workers. Most intervention studies did not include booster sessions or involve the implementation of program activities over an extended period of time.

The evaluation studies conducted with the broader personal and social skills training approach also have had major differences in design, objectives, populations, dependent measures, sample size, and length of follow-up. Some studies simply tested the effectiveness of the prevention program when contrasted with a comparison (control) group. However, others were designed to provide information on the content of the prevention program, the scheduling format, the relative effectiveness of peers vs. teachers as providers, and the effectiveness of booster sessions. Some studies reviewed were pilot studies involving a few students from one or two schools, while others were larger scale studies involving 800 to 1,000 students from as many as ten schools. These differences make the difficult task of drawing conclusions from a group of studies even more difficult. However, it is possible to make some general statements about these studies overall.

All the studies testing personal and social skills training approaches demonstrated significant behavioral effects. The magnitude of reported effects typically appears to be relatively large. In general, the studies demonstrated that generic skills approaches to substance abuse prevention can produce reductions in new experimental smoking ranging from 42% to 75%. Schinke and Gilchrist[45] reported a 79% reduction in the prevalence of experimental smoking. Data from two studies[38,39] demonstrated reductions ranging from 56% to 67% in the proportion of pretest nonsmokers becoming regular smokers at the one-year follow-up without additional booster sessions. One study by Botvin and colleagues reported an 87% reduction in the initiation of regular smoking for students who participated in the prevention program in seventh grade and received additional booster sessions in eighth grade. Overall, these effects tend to be greater than those reported in the studies evaluating the efficacy of the social influence approaches.

An issue raised by some reviewers[12] is that prevention programs may merely have an impact on the transition from nonsmoking to experimental smoking and may not, in the final analysis, prevent or reduce more regular smoking. However, evidence exists indicating that these prevention approaches initially produce reductions in the onset of experimental smoking followed by reductions in regular smoking. Several studies conducted by Botvin and associates indicate that the initial reductions in new experimental smoking frequently observed at the end of their prevention program result in later reductions of an equal magnitude in more regular cigarette smoking, whether this is assessed by a weekly measure of smoking[38,39,42] or a daily measure.[39,42] Several of the studies indicate that broader-based generic approaches, though generally longer than social influence approaches, may be more efficient since they can impact on several related behavioral domains at the same time. Botvin and colleagues reported significant effects for alcohol use[40,41] and marijuana use.[40,42] Pentz[43] reported her intervention program had a positive effect on students' alcohol use and academic performance. Schinke and colleagues[47] found that an approach similar to the one used in preventing cigarette smoking also was effective as a strategy for preventing teen-age pregnancy.

These studies also provided information about the conditions under which this type of prevention approach can be effective. The findings of these studies indicate that generic personal and social skills substance abuse prevention programs can be effective whether the primary providers are project staff, social workers, graduate interns, peer leaders, or classroom teachers. These approaches also were effective with rural, suburban, and urban students. One study by Botvin et al[40] suggests that a more intensive programming format (several sessions each week) may be more effective than a less intensive format (one session each week) spaced over a longer period of time. Evidence also exists indicating that booster sessions may help maintain and even enhance program effects.[39,42]

A major strength of the evaluation studies conducted with the broader personal and social skills training approaches is that they have attempted to measure variables which are hypothesized to mediate the impact of the prevention programs on the behavioral outcome variables. These prevention approaches produced measurable effects on a spectrum of mediating variables in a direction consistent with nonsubstance use. These include significant changes in knowledge and attitudes, assertiveness, locus of control, social anxiety, self-satisfaction, decision-making, and problem solving. Most variables were measured by questionnaire, raising some questions about the degree to which specific skills, such as assertiveness, were enhanced.[48] Notable exceptions are manifest in the studies conducted by Pentz[43] and Schinke and colleagues.[44] These investigators have utilized behavioral assessment techniques such as taped role play situations that require students to demonstrate their skill in handling situations that warrant an assertive response. Through such approaches, a relatively direct assessment of the extent to which students have acquired specific skills can be made.

METHODOLOGICAL ISSUES

Despite the emphasis on evaluation and the high quality research that has been conducted with the newer psychosocial substance abuse prevention approaches, recent reviews[11,12,48,49] identified several methodological issues that deserve further consideration by prevention researchers. The issues include the validity of self-report data, the appropriateness of research designs, the unit of assignment, the unit of analysis, the pretest equivalence of experimental groups, and the potential impact of attrition on internal and external validity.

Though many of the earlier studies testing psychosocial prevention strategies are criticized for shortcomings in one or more of these areas, the more recent studies have become progressively more rigorous as investigators discovered potential methodological problems and placed an increasingly greater emphasis on enhancing the internal validity of the studies. Recent studies have collected saliva or breath samples prior to obtaining self-report data. This procedure (commonly referred to as the "bogus pipeline") has been found to increase self-reports of smoking behavior, presumably because students are more likely to give truthful self reports if they believe smoking status can be determined through an analysis of saliva or breath samples.

When the earlier pilot studies are compared with the more recent (and more methodologically rigorous) evaluation studies, the same effects are found for substance use behavior. This consistency of results across studies is perhaps the most persuasive evidence concerning the efficacy of these prevention approaches, providing considerable cause for optimism.

SUMMARY AND CONCLUSIONS

Recent advances in the substance abuse prevention field prompted the development and testing of two new prevention approaches. One approach is based on the model initially developed by Evans and associates, and subsequently modified by other investigators, to prevent cigarette smoking. This approach posits that the onset of cigarette smoking among adolescents is largely the result of social influence. Consequently, smoking (or the use/abuse of other substances) might be prevented by a strategy that increases adolescents' resistance to such influences.

The other major prevention approach incorporates at least some of the same components as the social influence programs. However, these components are included within the context of programs designed to enhance general personal and social competence. Distinguishing features of the programs include teaching generic personal skills such as problem-solving and decision-making cognitive and behavioral coping strategies for relieving stress and anxiety, and teaching generic social skills such as communication skills, conversational skills, and assertive skills. Programs based on this approach generally emphasize the use of cognitive-behavioral self-control or self-management techniques for coping with a broad range of situations—including but not limited to, situations relating specifically to substance use.

More than 20 research studies testing programs based on these two prevention models have demonstrate significant reductions in substance use (typically cigarette smoking). In general, the personal and social skills training programs appear to produce greater reductions in substance use than the social influence programs with the largest effects produced by programs combining components from both approaches. Only limited evidence exists concerning the extent to which these prevention strategies are effective for impacting on substance use other than cigarette smokeing and this comes primarily from the studies testing personal and social skills training approaches. In these studies, preliminary evidence indicates that this type of prevention strategy can significantly reduce both marijuana use and excessive drinking. Results from several studies also have indicated that these prevention strategies can produce changes on hypothesized mediating variables, providing at least preliminary evidence for the construct validity of these prevention models.

Despite the very promising results obtained with both approaches, enthusiasm should be tempered somewhat by an awareness of the limitations of the studies evaluating these approaches. Though methodological shortcomings were identified and overcome as the prevention field has matured, caution must be exercised in interpreting the results of any one study. Consideration of the body of research with these newer prevention strategies does, however, provide the most promising evidence to date of the efficacy and viability of preventive approaches to the problem of substance abuse. Though the studies conducted thus far with psychosocial prevention approaches are not conclusive, they provide a solid empirical foundation for future research.

FUTURE DIRECTIONS

Future research is needed to refine and test these prevention models. Several important issues need closer attention. The studies conducted to this point primarily have involved white, middle class populations. Little is known about the effectiveness of these strategies with other populations. Even within the populations already studied, much more information is needed about which students are affected by these programs.

Other issues that require future attention include determining the effectiveness of various types of program providers, the optimal age for intervention, the extent to which school and teacher differences affect program delivery, the potential efficacy of family intervention components, the impact on other forms of substance use, the relative importance of specific program components, and the extent to which reductions in substance use during early adolescence result in subsequent reductions of substance abuse.

Finally, future research needs to address several issues related to large scale dissemination such as program acceptability, fidelity of implementation, and provider training. While considerable strides have been made in recent years, much work remains.

Notwithstanding the need for further research, there is clearly an immediate need for effective prevention programs. While future research attempts to refine current prevention strategies or develop new ones, it seems prudent to encourage dissemination of the most promising of the newer psychosocial approaches to substance abuse prevention. However, this should be done with the recognition that school-based prevention programs alone—no matter how effective—may not be sufficient. Given the magnitude and severity of substance abuse in society, well-coordinated efforts involving educators, parents, community leaders, and law enforcement agencies are essential.

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Prevention of Substance Abuse in Children and Adolescents

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THE PROBLEM

When the subject of substance abuse is broached with adolescent patients, most respond with an all-knowing acknowledgment that it exists, and that the use of alcohol and other drugs is fairly commonplace among their friends and associates. Even the "straightest" of youngsters may admit to experimenting with alcohol and tobacco, or even marijuana, and many pre-adolescents and junior high school students report that if they wanted to, they easily could obtain not only cigarettes and alcohol, but other illicit substances as well (alcohol and tobacco must be considered illicit substances when used by minors).

Older adolescents report that weekend consumption of alcohol by their friends is the rule, and often is used in excess to become intoxicated. They say that few social events occur without the presence of alcohol, tobacco, and marijuana. Parents complain that their teenagers argue and plead that a party cannot be a success without "booze." Adolescents themselves complain that almost every social activity, such as athletic events, rock concerts, and school dances, includes alcohol and marijuana. The young person who does not wish to use drugs feels that it is almost impossible to avoid them, to socialize, or to "do anything" without alcohol and drugs being a part of it. Those who do not abuse drugs report feeling different, excluded, or just not "with it." However, most do state that if they wish to abstain, their peers do not pressure them. Nevertheless, when they refuse, many say they feel left out of the group, complaining that "it's difficult not to do drugs and booze when everyone else is, even though you know it's wrong." From clinical impressions alone, it seems clear that for adolescents, including those without a strong biological or psychological predisposition to substance abuse, preventive strategies must address the seductive nature and subtle pressure of the peer group.

TABLE 1. HIGH SCHOOL SENIORS WHO USE EVERY DAY (%)

	1975	1980	1984	1985	1988
Alcohol	5.7	6.0	4.8	5.0	4.2
Cigarettes	26.9	21.3	18.7	19.5	18.1
Marijuana	6.0	9.1	5.0	4.9	2.7
Stimulants			0.6	0.4	0.3
Cocaine	0.1	0.2	0.2	0.4	0.2
(15-20% School dropout rate)					

From Johnston LD, et al: Drug Use, Drinking, and Smoking: National Survey Results from High School, College, and Young Adult Populations, 1975-1988. Rockville, MD, National Institute on Drug Abuse, 1989, with permission.

A recent national survey has shown an encouraging decrease in the regular use of and experimentation with drugs by adolescent students. The data show, however, a continuing problem (Tables 1-3).[14] A limitation of the survey is its inclusion of only those attending or recently graduated from high school, whereas it does not report abuse among the 15-20% of teenagers who have dropped out of school and not graduated. If accurate data were available, they almost certainly would show a higher rate of abuse than that reported for high school seniors and graduates. In spite of what appears to be a trend toward

TABLE 2. LIFETIME PREVALENCE (EVER USED) (%)

	1985	1987	1988
Alcohol	92.2	92.2	92.0
Tobacco	68.8	67.2	66.4
Marijuana	54.2	50.2	47.2
Stimulants	26.2	21.6	19.8
Cocaine	17.3	15.2	12.1

From Johnston LD, et al: Drug Use, Drinking, and Smoking: National Survey Results from High School, College, and Young Adult Populations, 1975-1988. Rockville, MD, National Institute on Drug Abuse, 1989, with permission.

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TABLE 3. THIRTY-DAY PREVALENCE (%)

	1978	1985	1988
Alcohol	72.1	65.9	63.9
Cigarettes	36.7	30.1	28.7
Marijuana	37.1	25.7	18.0
Stimulants	8.7*	6.8	4.6
Cocaine	3.9	6.7	3.4

From Johnston LD, et al: Drug Use, Drinking, and Smoking: National Survey Results from High School, College, and Young Adult Populations, 1975-1988. Rockville, MD: National Institute on Drug Abuse, 1989, with permission.

*Only drug use not under a doctor's orders.

TABLE 4. ADOLESCENT MORTALITY—AGES 15-24 (n = 38 million)[23]

Cause of Death	Rate per 100,000	Absolute Number	Alcohol-related (%)
Accidents	51.2	20,480	40
Homicide	14.2	5,680	30
Suicide	13.1	5,240	20
Malignancy	5.4	2,160	0
Automotive*	39	15,600	45

*Automotive deaths under age 21 years, 51%.

less substance use by adolescent students, the United States still has the highest rates of drug use among the world's industrialized nations. Ninety percent of high school seniors in 1988 had used alcohol, over two-thirds tobacco, almost half marijuana, and almost a third had tried an illicit drug other than marijuana. Cocaine use continues, with 12.1% of graduating high school seniors reporting ever having used it, and 3.4% reporting some use in the month preceding the study (Tables 2 and 3).

The abuse of alcohol and other drugs is the greatest cause of disability and perhaps death in adolescents and young adults. The leading causes of death in teenagers are accidents, homicide, and suicide.[21] Over half of all accidents in the 15-24 year age group are due to motor vehicle fatalities, of which 45% are related to alcohol abuse.[8] For those under 21 years, 51% were alcohol related.[30] Thirty percent of homicides and at least 20% of suicides are alcohol related.[10] Other drugs certainly play a role as well (Table 4). The long-term consequences of drug use include perinatal and congenital disorders, metabolic and cardiovascular complications, lung and other malignancies, and the effects of these problems on family and community. Perhaps the greatest concern are the harmful effects on adolescent psychosocial and cognitive development. Intoxicants are used by older children and adolescents to avoid dealing with the demands of this developmental stage and to sidestep confrontation and escape the work needed to resolve normal adolescent issues and conflicts. Educational deficits related to being inebriated or "high"

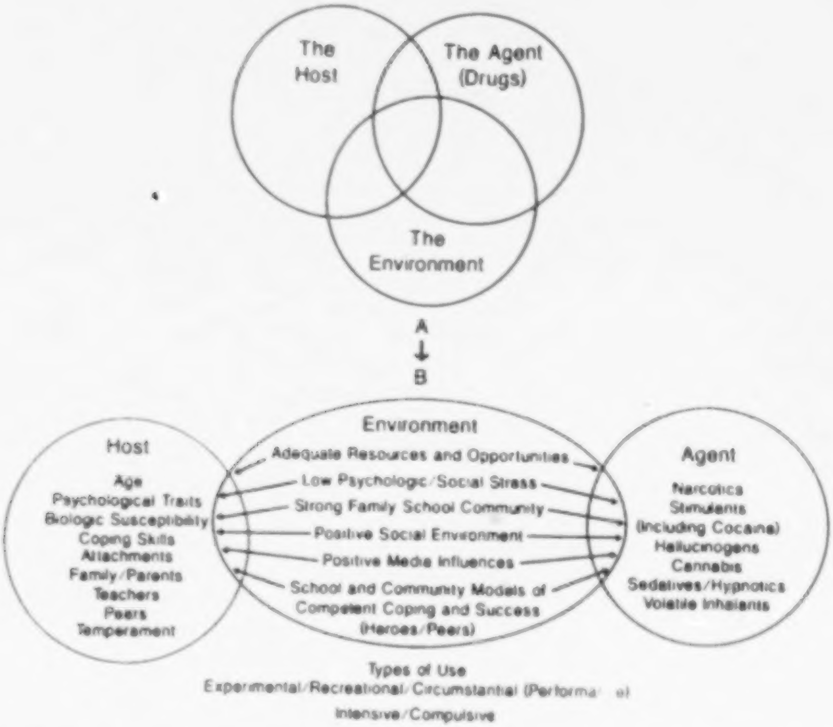
The Host
The Agent (Drugs)
The Environment
A
B
Environment
Adequate Resources and Opportunities
Low Psychologic/Social Stress
Strong Family School Community
Positive Social Environment
Positive Media Influences
School and Community Models of Competent Coping and Success (Heroes/Peers)
Host
Age
Psychological Traits
Biologic Susceptibility
Coping Skills
Attachments
Family/Parents
Teachers
Peers
Temperament
Agent
Narcotics
Stimulants
(Including Cocaine)
Hallucinogens
Cannabis
Sedatives/Hypnotics
Volatile Inhalants
Types of Use
Experimental/Recreational/Circumstantial (Performa[illegible]al)
Intensive/Compulsive

FIGURE 1. Relationship and overlap of risk factors (A). The more effective the environment is in keeping host from agent, the less likelihood of substance abuse (B). (Modification of a Venn diagram by Bell. See p. 142.)

in school, having a hangover, and losing motivation all result in long-term negative effects. The financial cost to society in 1986 in terms of lost productivity, medical expenses, and crime was approximately 205 billion dollars.[17] The need for prevention strategies is underscored by these statistics.

THEORETICAL BASIS OF PREVENTION

Prevention strategies are most likely to be effective when based on an understanding of the causes of drug abuse. Because there is no one cause of drug experimentation, drug abuse, and the all-too-frequent progression to drug dependence, no single prevention method will be completely effective. Different risk factors and mixtures of factors can lead to problem use. The Venn diagram provides a useful model for visualization of the relationship and overlap of these risk factors (Fig. 1).

The Host

An understanding of factors that lead to host susceptibility and resistance is essential to prevention planning. This understanding helps to explain why some will experiment with drugs and others will not. It also helps to explain why some may experiment with drugs and later quit, while others become uncontrollably involved. There are differences in human response to situations and to the effect of drugs. Individual differences, such as learning ability, birth order, and psychiatric disturbances, probably contribute to increased host susceptibility, but age is probably the most important adolescent risk factor.[5,20]

Young people are at increased risk because of their relative inability to relate long-term consequences to current behavior, their risk-taking behavior and thrill-seeking nature, and their greater need for acceptance by their peers. Their normal need to form their own identities and separate from their parents, their emerging adult sexuality, their views of what constitutes rite of passage—all contribute to an increased susceptibility to experimentation with drugs, including alcohol and tobacco. Effective prevention strategies must address the inherent immaturity of children and youth and provide protection during the duration of this maturational process. Close supervision should be withdrawn slowly and only as social competence is demonstrated and ongoing, regardless of chronologic age.

Biologic susceptibility is too often ignored in prevention planning. We know about genetic patterns of alcoholism and suspect the same for other drugs. Biologic factors exist independent of psychologic and environmental influences. For alcohol, two patterns have been described, but it is believed there are many more. Twins, separated at birth, were placed in foster or adoptive care with non-biologic parents. In one pattern, biologic sons of alcoholic fathers had early onset of severe alcoholism. Another pattern, termed milieulimited, was milder, of later onset, and was dependent on an environment conducive to drinking.[12,27]

Danish adoption studies have shown that sons of alcoholics were four times more likely to be alcoholics, and at earlier ages, than the sons of non-alcoholics whether reared by non-alcoholic parents or their own biologic parents.[11]

Additionally, biologic differences have been shown in 30—50% of Orientals. Absence of the isoenzyme aldehyde dehydrogenase results in facial flushing palpitations, and nausea, and acts as protection against heavy drinking.[11] Begleiter has described a characteristic electroencephalographic pattern of event potential-related wave flattening which occurs 300 milliseconds after stimulus in some adolescent "alcohol-naive" sons of male alcoholics. This wave, once thought to be a sign of the destructive effects of alcohol on the brain, is now believed to be a potentially useful marker of susceptibility to alcoholism.[4] Monoamine oxidase activity level and several other blood protein levels, such as PT1-Duarte, seem to differ between alcoholic and control subjects.[26]

Unfortunately, we do not have a consistently reliable marker of increased susceptibility to alcoholism and other drugs. These studies show, however, that there are different patterns of response to alcohol and suggest that some adolescents, regardless of other protective and risk factors, should be advised to avoid experimentation. Because it is impossible to predict with certainty which individuals have increased susceptibility, the safest route to prevention would be to advise all youngsters to abstain completely. Experimentation by a very well-adjusted, but biologically vulnerable, adolescent even in the best of circumstances can lead to biologic loss of control. These youngsters must be advised against experimentation and even casual or socially acceptable (i.e., religious or ritualistic) use.

The Agent (Drugs)

In addition to individual variations in biologic response to drugs, prevention planners must consider the biologic effects that psychoactive drugs have on all users. It is irresponsible to talk about responsible or moderate use of drugs by young people when one considers the likelihood of dependence for most addictive substances.

Risk factors for use are not necessarily the same as the risk factors for experimentation. Peer pressure, media messages, and normal curiosity may lead a child or adolescent to experiment. The drug effects, however, may determine whether use continues. Each drug has its own ability to produce dependence and, like alcohol, genetic determinants may be the major factor that causes one person to lose control while another does not. Not surprisingly, a most important predictor of cessation of drug use in young adulthood is the degree of prior involvement in licit and illicit psychoactive drugs.[16] This, in turn, is likely related to increased biologic susceptibility.

How dependence results is unclear but cocaine studies may provide a clue. Cocaine's principal psychoactive effect seems to occur in the ventral tegmental area of the hypothalamus where it blocks re-uptake of the neurotransmitter dopamine at the synapse. This allows dopamine to continue its stimulatory effects on the postsynaptic receptors in the "pleasure center" of the brain. With time, increased receptor sites develop and dopamine supply becomes depleted. Many believe it is this biologic alteration that produces the intense craving caused by cocaine and other drugs beyond the ability of the will and intellect to control continued use.[34]

The Environment

The attitudes and messages of a teenager's environment strongly influence his or her behavior. The strongest predictor of use is the use of drugs, especially marijuana, by an adolescent's peers.[25]

Parental patterns of drug use and attitudes about acceptability of drug use also have a strong effect.[6,29] Family rituals can have a strong protective effect.[32,33] Family problems and dysfunction can cause an increase in adolescent drug taking and other problem behaviors.[23]

Media messages of acceptance and humor related to intoxication can increase acceptance, resulting in more use of alcohol and other drugs. Rock stars, models, athletes, and other celebrities can influence drug-taking behaviors.

During the last decade there has been a dramatic change in the media portrayal of tobacco, alcohol, and other drug use and in public acceptance of these messages. This attitudinal change in no small way relates to the dramatic decrease in drug use reported among high school seniors.[2]

THEORIES OF CAUSATION

In order to develop more effective prevention strategies, the various theories of substance abuse causation should be considered both in light of what has been already discussed about biologic vulnerability to drug abuse and with regard to recent studies of psychosocial etiologies.[22] From this psychosocial theoretical framework can be derived additional types and timings of interventions. Four major psychosocial perspectives have been advanced to explain why people abuse substances: (1) the problem behavior theory;[13] (2) the social learning theory;[3] (3) the stage theory;[15] and (4) the biopsychosocial theoretical model.[31] All of these theories emphasize the interaction of personality, environment, and behavioral factors. Most prevention programs are based on social learning theory and problem behavior theory with, unfortunately, little consideration of biologic (or genetic) vulnerability. Substance abuse is seen as a learned behavior through a process of modeling and reinforcement determined by individual personality traits, temperament, attitudes, and beliefs. Each theory will be described briefly in order to relate it to preventive strategies.

The Problem Behavior Theory

The problem behavior theory supports the position that drug abuse is related to a person's overall propensity to problem behavior.[13] Problem behaviors result from the interaction of three interconnected systems—behavior, personality, and perceived social environment. Demographic and socialization factors also influence problem behavior, but to a lesser degree than the above three. The behavior system is divided into two structures, a problem behavior structure (e.g., drug abuse) on the one hand, and a conventional behavior structure (e.g., church, school, and academic achievement) on the other. Involvement in one structure is an alternative to and decreases the likelihood of involvement in the other. For example, a young person who excels at school and regularly attends church (conventional behavior) is unlikely to become involved in antisocial behaviors including substance abuse (problem behavior).

The personality system has three structures: a motivation-expectation instigation system (e.g., high expectations for achievement, independence, and close peer relationships); a personal belief structure (e.g., high self-esteem, sensitivity to social criticism and alienation, and a feeling of being in control—that one's decisions make a difference); and a personal control system (e.g., tolerance, religiousness, and awareness of the consequences of problem behaviors).

The perceived social environment is divided into distant and close components of structures which are composed of factors or influences that are either directly or indirectly related to substance abuse. Distant influences include perceived support and controls from parents and peers, similarities between parents and friends about what is considered acceptable behavior, and differences in influence between parents and peers. The close (or proximal) structure deals with the degree of agreement between parents and peers regarding problem behavior and the degree to which peers model a problem behavior.

Social Learning Theory

Social learning theory extends beyond the problem behavior theory, placing more importance on demographic and socialization factors.[3] It suggests that the likelihood of a person engaging in problem behaviors is related to the opportunities and social influences to which he or she is exposed, the attractiveness of the behavior, and the amount of positive feedback or reward the person gets for a particular behavior. The rewards one receives for a given behavior increase the likelihood that the behavior will continue. The less opportunity an individual has for participation in conventional group activities (and the less successful), the more likely that person will engage in problem behaviors. Thus, substance abuse is seen as a learned and purposeful behavior that derives from psychosocial, environmental determinants and results in positive reinforcement for the individual.

Stage Theory

The stage theory of substance abuse proposes that abuse of drugs proceeds through a series of different stages.[15] Kandel observed that adolescents begin with abuse of beer and wine, progress to hard liquor and cigarettes, later marijuana, and finally to other illicit "hard" drugs such as cocaine, heroin, and amphetamines. Although involvement in the early stages of abuse does not necessarily lead to later stages of abuse, the converse is not true—involvement in the use of "hard" drugs (i.e., a later stage of involvement) is very unlikely if one was not involved earlier with so-called "gateway drugs."

Interestingly, Kandel was able to associate certain deviant activities with particular drugs of abuse. For example, poor relations with parents, depression, heavy marijuana use, unconventional attitudes, and exposure to drug-using peers and role models are strong predictors for use of cocaine, heroin, amphetamines, and LSD.

Biopsychosocial Model

The biopsychosocial model, emerging from the field of behavioral medicine, has two basic premises.[31] First, drugs may be abused as a means of coping with unpleasant or painful emotions. For example, a person might abuse amphetamines to relieve dysthymia or depressive feelings, or marijuana to reduce anxiety. The second premise is that persons utilize two types of stress reducing skills: one aimed at coping with a variety of daily living stressors, and the other to defend against the temptation to experience the pleasure of an illicit substance. This model suggests that substance abuse is the result of a general deficiency in coping skill (generic stressors and responses) and that adolescents with poor generic coping skills—when faced with the pressure or temptation to use a drug—are more likely to succumb than those with good skills. Clinically, it is evident that young persons who have difficulty delaying gratification, who have not had experience dealing with adversity, and impulsive youth all seem to be more likely to engage in abuse.

MODELS FOR THE STUDY AND PREVENTION OF SUBSTANCE ABUSE

Concept of High-risk Adolescent

Theorists emphasize the importance of individual personality and coping styles, family and peers, and their interaction as etiologic factors for substance abuse and dependence. From these theories derives the concept of the high risk individual. Current prevention programs rely heavily on this theoretical framework. Characteristics that constitute a high-risk adolescent profile include low religiosity, low self-esteem, indefinite values, poor interpersonal relations, poor coping skills, and low resistance to pressures to use drugs. When this emphasis on the individual is translated into prevention programs, there is less importance attributed to broader environmental and community factors, such as inferior education, limited opportunities for advancement, discrimination, and other constraints.

Social Stress Model

Rhodes and Jason[24] propose a social stress model, derived from Albee's model of psychopathology,[1] as an alternative approach to the study of adolescent substance abuse. This model attempts to include the broader social factors as well as those described above. The model goes beyond the individual and family and stresses substance abuse as the outcome of many different experiences in the family, school, and community which influence identification with parents, peers, and role models. Adolescents who have (1) positive attachments with their families, teachers, and peers, (2) adequate coping skills, and (3) school and community models of competent coping and adequate resources and opportunities are more likely to deal with stress effectively and less likely to resort to problem behaviors including drug abuse (Fig. 2).

$$\frac{\textbf{Stress}}{\textbf{Attachments + Coping Skills + Resources}} = \textbf{Risk for Substance Abuse}$$

FIGURE 2. The interaction of variables may allow prediction of which adolescents will abuse drugs and which will not. Attachments (A) = consistent parenting and opportunities and rewards for effectively coping with challenges; coping skills (CS) = the ability to effectively interact with others and cope with stress; and resources (R) = competent role models and opportunities for success. (From Rhodes JE, Jason LA: Preventing Substance Abuse Among Children and Adolescents. New York, Pergamon Books, Inc., 1988, with permission.)

Stress

The risk for substance abuse (RSA) is seen as a function of the stress level and the extent to which it is offset by positive attachments (A), coping skills (CS), and resources (R) (Figs. 2, 3, and 4).[24] There are a number of levels of stress:

- Major life events such as the death of a parent or a serious accident are sudden events followed by a period of shock and readjustment. The adolescent may turn to drugs as a way of dealing with the loss or trauma.
- A second level of stress relates to problems of everyday living—arguments over the use of the telephone, the family car, or curfew. These "daily hassles" tend to be chronic and drugs may be used as a means of escaping or distancing oneself from the ongoing connfict.
- A third kind of stress persists over time and is not easily resolved, such as issues of privacy, poor housing, poor schools, and neighborhood, which are usually related to the socioeconomic status of the family. Adolescents may be the victims of discrimination and often feel hopeless about their chances for success. Substance abuse in this situation not only offers an escape but may reflect underlying anger and a need to rebel.
- Transitional stress relates to the discomfort felt by the teenager when faced with change, such as a new school or community or a first job. It is not unusual for physicians to see a young person who is angry about a family move from another community. Drugs may be taken to deal with the anger generated by the move or to provide a means of decreasing anxiety created by a new social situation.

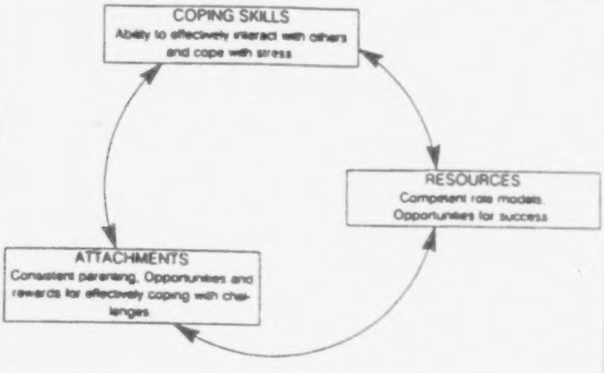
COPING SKILLS
Ability to effectively interact with others and cope with stress
RESOURCES
Competent role models.
Opportunities for success
ATTACHMENTS
Consistent parenting. Opportunities and rewards for effectively coping with challenges

FIGURE 3. Transaction of variables. (From Rhodes JE, Jason LA: Preventing Substance Abuse Among Children and Adolescents. New York, Pergamon Books, Inc., 1988, with permission.)

- Another kind of transitional stress is that associated with the changes of puberty and the stress and anxiety caused by the psychosocial maturation process. Concern about body changes, autonomy and separation issues, acceptance by peers, and the need to rebel may contribute to the initiation of substance abuse.

Attachments

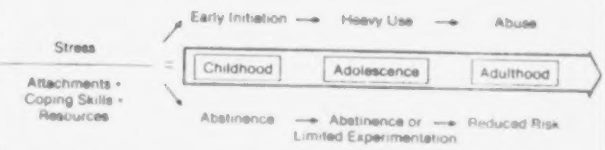

FIGURE 4. Social coping model of substance abuse: The outcomes. (From Rhodes JE, Jason LA: Preventing Substance Abuse Among Children and Adolescents. New York, Pergamon Books, Inc., 1988, with permission.)

Strong attachments to family, peers and school are like inoculations against involvement with drug-abusing peers. Adolescents who, as children, have not incorporated parental values and standards or identified positively with parents are at greater risk of associating with drug-abusing peers and abusing drugs themselves. Lacking support at home, these adolescents are more likely to seek out others with similar home situations.

Successful attachment or bonding depends on three variables: (1) exposure to opportunities and positive influences and role models, (2) adequate skills and competent performance, and (3) amount of rewards received for performing. A positive outcome of these influences will increase the adolescent's sense of efficacy and control. The stronger the family and school attachments, the less likely an adolescent will attach to a delinquent or drug-abusing peer group. Those behaviors rewarded in most families and schools are the opposite of those rewarded by delinquent adolescents.

Skills

The development of effective coping and social skills depends on the kinds of attachment and stressors that occurred during childhood and adolescence. Adolescents who have been provided the opportunity to learn appropriate skills, who have been rewarded for using those skills, and who have not suffered debilitating or traumatic stressors are more likely to acquire the skills necessary to ward off substance abuse. Both the biopsychosocial model and the social stress model support the position that children and adolescents who have a broad range of coping skills are much less likely to need substances in order to deal with stress.

Resources

Families, communities, neighborhoods, and schools contribute resources necessary for successful coping and influence behavior both directly and indirectly. When adequate models of success are present and success seems attainable, and when opportunities for education and

BEST COPY AVAILABLE

employment and rewards exist, alternatives to drug abuse increase. Conversely, when these resources do not exist, the risk for drug abuse increases. This view is supported by the very high rates of substance abuse among youth from minorities who live in inner city neighborhoods, are unemployed, and are school dropouts.

Theory and Prevention

The social stress model described above suggests numerous kinds of interventions and times when these interventions are critical. In addition to focusing on the individual, the family, and peers, it emphasizes the need for broader large-scale social, political, and economic intervention. For example, the community is a constant source of information that influences behavior. Therefore, efforts at prevention must take into account school and social policies. The key to successful prevention is to address all of the issues—the individual, family, peers, school, neighborhood, and community. As a practitioner, efforts can be taken to help individuals deal with stress, to reduce stress, and to encourage positive attachments to the family and school system. As a member of the community, physicians can influence school policy that will enhance social coping skills in order to offset the harmful effects of stress. As citizens, physicians can influence social policy and institutions that may play a role in prevention of drug abuse.

PREVENTION PROGRAMS

History of Prevention Programs

Basically, there are three substance abuse prevention strategies that have been used for children and adolescents: drug information/education, skills training, and community-based prevention programs. Historically, early prevention programs in the 1960s relied on imparting information about specific drugs and their untoward effects. These methods failed, partly because of inadequate and often conflicting data that resulted in a loss of credibility among educators. Educational efforts and attempts to dissuade young people from using drugs were overwhelmed by social factors during a chaotic period that contributed to family changes and disruption, rebellion against authority, and a new sense of individual rights above all other considerations. Such emphasis on personal pleasure found expression in such phrases as "do your own thing," and "if it feels good, do it." Consumption of alcohol and other psychoactive substances rose with a perception of the harmlessness of such drugs as marijuana and LSD. However, the dangers of such substances were not yet elucidated by modern scientific evidence. The potency of marijuana—John Lennon's "harmless giggle"—was 1/10th to 1/20th of what it is today. Timothy Leary encouraged the use of LSD and suggested, "tune in, turn on, drop out." Professionals, including pediatricians, who advised against drug use even without supporting data were accused of using scare tactics and of being unscientifc. Physicians were confused, considering that the scientific approach to approving a prescription drug for use was first to prove it safe and effective (i.e., therapeutic). Therefore, many decided simply to say nothing until "the facts were in." Consequently, drug use increased because it was touted as safe and acceptable by a subculture of young adults attempting to expand their consciousness and to experience something new, different, exciting, or calming. Parents and professionals alike collapsed under the pressure and began to accept drug use as inevitable and a "normal phase" of growing up. They spoke of moderation and responsible use. Those who recommended abstinence were accused of being unrealistic moralizers. Teachers, physicians, and other professionals are only now beginning to understand the real threat of alcohol, tobacco, marijuana, and other drugs.

During the late 1960s factual drug information was presented in an attempt to encourage young people to make informed and rational decisions. Subsequent research suggested that this matter-of-fact approach may have been counterproductive. By arousing curiosity and providing instruction in the use of drugs, the programs actually may have contributed to *increased* drug abuse. In the 1970s programs attempted to improve self-esteem, decision making, and communication skills. Increasingly, the focus was on clarification of values regarding drug and alcohol use. Although we are uncertain of their benefit, these affective education programs still are part of most drug treatment programs, particularly those that are school-based. Assuming that drug users are attempting to expand their experiences and seek excitement and relief from boredom, the idea of providing "alternative highs" emerged and is still used in most programs. In particular, the use of peer counseling and adolescent presenters is an outgrowth of this earlier movement.

Four approaches to prevention emerged in the late 1970s and early 1980s: (1) "grass roots" efforts by parents and community leaders in response to a feeling that existing programs were ineffective, (2) programs that fostered "responsible use," (3) the use of peer counselors to combat peer pressure to use drugs, and (4) programs that were comprehensive and employed interventions that impact at all levels of society.

Current Prevention Programs

Current prevention programs incorporate all of the above doctrines except for that of "responsible use," which is no longer considered by most authorities as an option. There is no single approach to the prevention of substance abuse. Current efforts at prevention are based on the assumption that risk factors for substance abuse are present at all levels of society. Risk factors include individual biological and psychological vulnerabilities, familial and environmental influences, and broader sociocultural determinants. Interventions are aimed at altering one or more of the above factors. Therefore, one can categorize programs on the basis of the particular risk factor being addressed *Schools Without Drugs: What Wins*, a widely used publication of the U.S. Department of Education, focuses in order of priority on: (1) the family, (2) the school and community, (3) the individual, and (4) the larger social environment.

1. Prevention programs that do not address **family** knowledge, attitudes, practices, and support are likely to fail. For youngsters with dysfunctional or absent families, alternative support systems must be found.

2. Programs focusing on the **individual** address one or more of the following risk factors: biological vulnerabilities, affective regulation, knowledge deficits, life skills deficits, and invulnerability and sensation-seeking. Family focused programs stress family dynamics, socialization deficits, negative parental modeling, and social control.

3. Programs that focus on the **peer group** address three mechanisms: (1) conformity to peer norms, (2) negative peer modeling, and (3) direct peer influence. School and community programs are primarily based on sociological or ecological models. They focus on one or more of the following risk factors: inadequate deterrence, availability of drugs, negative social climate, and poor social bonding

4. Programs that focus on **the larger social environment** include most school and community interventions, focusing primarily on sociological and ecological explanations of substance abuse. In addition, these programs have an institutional focus, addressing such issues as national legislation and the promotion of drug use by the mass media through advertising. The problem of popular music lyrics that seem to glorify drug use is one that is attracting the attention of parent groups and legislators, although a scientific basis for such concern is still evolving.[79]

Presently, programs aimed at preventing driving while under the influence of alcohol and other illicit drugs fall into two main categories: one emphasizes decreased drinking by any of the above methods in order to reduce alcohol-related problems, whereas the other attempts to separate drinking from driving. There is no evidence that the second approach, which seems to condone "responsible drinking" as long as one does not drive or does not ride in a car with an intoxicated operator, is effective. Advocates of this second approach (the traffic safety strategy) argue that until drinking and other drug use are eliminated, their method will reduce mortality and morbidity. They propose that the safer approach is to instruct young people to call home for rides for themselves and their friends, even if drunk, or if the driver has been drinking. Many believe this latter approach to be counterproductive with its ambivalent message about alcohol and drug use.

Preventive interventions include information and education programs, skills-based strategies, and community-based prevention programs with family and media involvement.

Information and education programs in isolation are destined to fail because they are based on the premise that youth begin to abuse drugs because they do not know the potential psychological, physical, and social consequences of drug use. Washington Post columnist William Rasberry has written, "Education is the answer only to the limited extent that ignorance is the disease." Substance abuse is caused by a multitude of factors, not simply ignorance of its dangers. Second, although adolescents respect adult opinions, they are more likely to respond to inconsistencies in adult behaviors (e.g., they do what you do, not what you say). Third, information presented is often contradictory to other information about drugs and contradictory to the adolescent's personal experience with drugs.

Skills-based strategies are intended to enhance the coping skills of youth in order to offset the influences and pressures to use drugs. They focus on role playing, assertiveness training, and cognitive modeling. There are limitations to this approach: not all children who are unskilled or socially incompetent become substance users. Likewise, some socially skilled and competent children and adolescents experiment and later go on to abuse drugs. It may not be a skills deficit alone that leads to drug abuse, but rather other environmental factors in the home, school, or community. Without attention to these other factors, skills-based programs will not be successful. However, this approach is superior to education alone.

Limitations to the skills-based approach include: complexity, cost, dissemination, target population, and focus of the programs. The complexity of the programs may be overwhelming when one considers the number of behavior changes being introduced. The cost is high, frequently being implemented by outside consultants and using expensive manuals. Dissemination is difficult even with a well-developed training manual. Practitioners, including teachers, often lack the training or hands-on experience to deal with the day-to-day problems that arise. In addition, the target population for these skills-based programs is essentially white middle-class children and adolescents. This excludes a large number of lower socioeconomic and minority students. Moreover, current programs may not be culturally sensitive, thus lacking credibility for many youth.

Community-based programs consider environmental variables and integrate the family, the school, the community, and the media into their approach. These programs move beyond the individual, the family, and the classroom and may hold the greatest promise for influencing young people to avoid substance abuse.

The media—in both programming and advertising—

contribute to adolescent substance abuse by portraying drug and alcohol use in a positive light. Although exact proof of the above is lacking, it is clear that alcohol, tobacco, and drug advertisements are persuasive. Alcohol and drug use is promoted as mature, attractive, and desirable. It is portrayed as a reward for a hard day's work or a job well done. Children and adolescents learn about drug use from the media.[28]

The media, on the other hand, can play a very influential role in preventing substance abuse.[28] Media campaigns can provide information and provide skills to help adolescents deal with other pro-drug media messages. Broad-based media prevention campaigns in combination with a school-based skills program could represent the most potent approach to activating an entire community to deal with many aspects of the problem.

Early Identification of High-risk Youth

An important part of substance abuse prevention is the early identification and referral of high-risk youth. Based on longitudinal studies of antisocial and delinquent behavior, Loeber[18] found that it is possible to identify children who later will abuse substances. He emphasized the following points:

- the more frequent a problem behavior, the more likely it is to persist,
- an antisocial behavior noted in more than one setting tends to persist over time,
- when there are numerous kinds of problem behaviors, they will likely persist, and
- the earlier the antisocial pattern becomes evident, the more likely that it will persist.

Therefore, a correlation exists between the likelihood of chronic substance abuse and early age of onset of substance abuse, increased frequency of abuse, greater variety of abused substances and their nature, and the number of settings in which the drug-taking occurs.

Identification of high-risk children and adolescents relies on a strategy called "multiple gating." This technique begins with an inexpensive screening procedure for all students, proceeding to the use of more expensive measures for identified high-risk children. Rather than utilizing expensive, highly complex, skills-based programs and instructors for all children, the multiple gating procedure uses teacher and parent reports for the first assessment. Initially, teacher ratings identify those who show behaviors known to correlate with substance abuse (i.e., low academic performance, absenteeism, behavior problems in school). Only the high-risk children are reassessed by parent interview in order to assess parents' perceptions of their children's substance abuse patterns, the level of parent/child conflict, and discipline problems. These two "gates" are able to identify children and adolescents who are actively abusing drugs or whose problem behaviors highly correlate with drug-taking tendencies.[19]

The Venn diagram for understanding the multiple etiologies of substance abuse has been modified by Peter Bell of the Minnesota Institute of Black Chemical Dependency. In the Bell model (Fig. 1), the Venn diagram is revised to view the environment as a protective influence rather than as a risk factor. In this model, peer pressure is seen as a positive influence.

THE ROLE OF THE PRIMARY CARE PHYSICIAN

The number and variety of current drug and alcohol prevention programs give rise to the question of the physician's role in substance abuse prevention. Although all approaches have merit, none alone has been shown to be the best approach. A few suggestions to the practitioner are in order.

First, in working with the individual patient, practitioners can provide accurate drug information regarding the health hazards and consequences of drug abuse. They can be supportive of the young patient's desire to avoid using drugs. Practitioners can suggest alternatives to substance abuse. Of greatest importance is the role of the practitioner in early identification of the child or adolescent at risk for beginning substance abuse or the individual who is already using drugs. Appropriate referral is the physician's responsibility.

The physician must support community efforts at combating drug abuse and drug trafficking. As a respected authority, the practitioner should be available as an influential spokesperson regarding community-based programs or legislative initiatives. The practitioner should become knowledgeable regarding the scientific prevention literature in order to guide community efforts at preventing substance abuse.

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The Efficacy of Peer Leaders in Drug Abuse Prevention

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Klepp K, Halper A, Perry CL: The efficacy of peer leaders in drug abuse prevention. *Journal of School Health*. Vol. 56, No. 9, November 1986, pp. 407-411. Copyright, 1986. American School Health Association, P.O. Box 708, Kent, OH 44240. Reprinted with permission.

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ABSTRACT: The results from school-based, peer-led psychosocial smoking prevention programs suggest that this approach is effective in reducing smoking onset rates. This paper provides a theoretical rationale for using peer leaders as a major strategy in school-based drug abuse prevention programs and reviews the available literature assessing the impact of peer leadership in such programs. Furthermore, some of the practical issues involved in selecting and training peer leaders and teachers are discussed, and process evaluation data from studies conducted at the University of Minnesota are presented. The authors conclude that peer leadership can be an effective vehicle for drug abuse prevention among adolescents. However, increased research is necessary to clarify the conditions under which the impact of peer leaders is enhanced. (J Sch Health 1986;56(9):407-411)

Intervention programs in schools, based on psychosocial models, are a potentially feasible and effective community-wide strategy for deterring drug abuse among youth.[1,2] Several programs have used peer leaders as a major strategy. This paper provides theoretical and empirical rationale for using peer leaders in school-based drug abuse prevention programs and discusses some practical issues involved in selecting and training peer leaders and teachers to enhance their impact.

The use of students as peer educators counselors, or tutors is not a new concept in education.[3,4] Drug abuse prevention and, in particular, smoking prevention programs for adolescents are areas of health education research where peer educators have been trained systematically and successfully. In the process, attempts have been made to conceive and clarify the underlying theoretical assumptions for the use of peer education.[1,5]

Peer educators have been selected and trained to modify environmental, personality, and behavioral factors to deter drug abuse, based primarily on psychosocial conceptualizations.[6-9] At the environment level, peer educators serve as potent role models by demonstrating nonuse, by creating a norm that drug use is deviant rather than acceptable, and by providing alternatives to drug use. At the personality level, peer educators reinforce the importance of social responsibility and the value of health to weaken the importance of drug use. At the behavior level, peer educators teach social skills to resist pressure to use or try drugs and also help students identify and practice health-enhancing alternatives to drug use. The role of the peer educator is to serve as a positive role model and to provide social information rather than merely providing facts. For this reason, and because most programs have attempted to identify students who exhibit leadership qualities, peer educators in drug abuse prevention programs are most often referred to as peer leaders.[5]

Compared to programs in which the teacher alone manages the classroom, peer leaders enhance the program's applicability by modeling appropriate behaviors outside the school setting where experimentation with drugs is more likely to occur. Peer leaders have greater credibility regarding social information than teachers, while teachers are more credible sources of factual information. Because peer leaders possess fewer preconceived notions than teachers about how to teach in a classroom setting, peer leaders may be easier to train to conduct more experiential educational programs aimed at changing behavior. Peer leadership gives students positive opportunities to be responsible to themselves and others by being actively involved in the teaching process.

PEER LEADERSHIP ISSUES

The factors that contribute to effective peer leadership vary with the type of program. There is substantial conceptualization and implementation variation between programs that have used peer leaders. Smoking prevention programs, for example, are implemented at different grade levels, peer leaders are selected and trained differently, and the type of program activities often differ.

First, programs differ by who are considered peer leaders. Some programs use older students,[10-16] while others use same-age students as peer leaders.[5,17-20] Second, selection procedures differ. Some have the school administrators select students "who presumably reflect the natural leadership in the school,"[16] others ask students to volunteer as peer leaders with subsequent program and school staff screening the candidates,[11,13-15] and others have students select the peer leaders based on specific criteria.[5] Still other programs have not used peer leaders at all, but videotapes to model the same activities that live peer leaders are intended to perform.[17,20-23] Third, the roles of the peer leaders also differ. While some include the regular classroom teacher during the lessons,[5,13,14] other programs use university staff or college students to teach the programs with the peer leaders.[11,15] There are other studies that have relied on the peer leaders, unaided by adults, to implement the programs.[10,13,14] Peer leaders in most programs lead small group discussions and facilitate role play activities. However, programs differ in the extent that peer leaders lead classroom discussions or teach facts about the short-term and long-term consequences of drug use.

EFFICACY OF PEER-LED PROGRAMS

Overall, the results from school-based, peer-led psychosocial smoking prevention programs suggest that this approach is effective in reducing smoking onset rates.[1,2] However, little is known about how and why these programs affect onset.[24] Few reported studies, six of which are reviewed in this paper, have attempted to test the specific effect of using peer leaders. In Minnesota, Luepker et al[18] and Murray et al[19] reported on testing the differences between seventh grade programs that focused on the short-term consequences of smoking when led by peer leaders versus those led by adults. The studies conclude that same-age peer leaders appear to be necessary for successful use of the short-term consequences program. Similar results from a seventh grade substance-abuse prevention program using older students (tenth, 11th, and 12th grade) as peer leaders were reported by Botvin et al.[14] While the peer-led program contributed to lower prevalence rates of cigarette smoking, marijuana use, and excessive drinking, the teacher-led program appeared ineffective. However, these findings were not replicated in a large scale study conducted in Western Australia. The protocol of the Western Australia study was a modified version of the Minnesota short-term consequences approach, but the peer leaders had greater responsibility for the entire program than the peer leaders in the original program. Findings from this study indicated that the teacher-led program was the most effective in reducing smoking onset.[17] The High School Anti-Smoking Project[20] conducted at the University of Southern California failed to show any significant difference between the same-age peer leader and the teacher-only approach among the tenth grade participants. Finally, a recent study by Clarke et al[16] failed to show that older, selected students (ninth grade leaders working with seventh grade students) were any more effective than teachers in implementing a social skills training smoking prevention program.

Botvin and colleagues[14] suggest that the reported ineffectiveness of their teacher-led program might be due to lack of appropriate teacher training. This indicates the importance of appropriate training for both teachers and peer leaders. Though peer leaders possess an enormous theoretical potential to enhance the effectiveness of adolescent drug abuse programs, it is uncertain under which conditions peer leaders are most effective since most studies do not provide detailed reports on how the training was conducted.

PEER LEADER SELECTION AND TRAINING

During the past few years, the peer-leader approach developed in smoking prevention programs has been expanded to other areas of health promotion. At the University of Minnesota, studies utilizing peer leaders and regular classroom teachers to promote healthy eating and physical activity as well as smoking and drug abuse prevention are under way. In the Minnesota programs the peer leaders are same-age students, avoiding the logistical problems of bringing in older students. Peer leader elections, based on popularity, are conducted in each class.

> ***". . . the peer-leader approach developed in smoking prevention programs has been expanded to other areas of health promotion"***

Students list the names of five students (at least two males and two females) that they "like, admire and would like to be like." Students are not told prior to the election that they are selecting leaders for a health promotion program. The five students with the most votes are asked to become peer leaders. They are invited to a formal training session on how to become peer leaders for the specific program. No elected student is disqualified based on academic achievement or use of drugs.

The three major strategies to consider when training peer leaders are environment, application, and motivation. First, to build an appropriate environment, peer leader training should be memorable and enjoyable. The training should not be structured as just another class. The environment should engage, entertain, and involve the students. If the peer leaders feel their selection and involvement is special and that the training (and the program) is important, they will "sell" the program effectively to their peers. Second, to ensure the training is applied—to make sure peer leaders can do what they have been trained to do—each peer leader rehearses the peer-led activities in small groups with the other participants acting as group members. Third, motivation is planned and provided in the training so that the peer leaders return to their classrooms with a sense of enthusiasm for their new roles. They should see their peer leader jobs as important for themselves and others. This natural altruism is an important motivator for adolescents.

Activities that peer leaders are responsible for in health promotion programs include leading small group discussions, reading and giving directions, compiling and reporting students' responses to particular, relevant questions, organizing role plays, and leading brainstorming sessions. A brainstorming activity might be introduced by the peer leader in this way: "Brainstorming means thinking of all the possible answers to a question. There are no right or wrong answers. The idea is to think of as many answers as we can. Right now, let's think of some activities we can do to have fun that don't involve drinking alcohol." During the training, peer leaders rehearse each type of activity that they will be responsible for in their classes.

Peer leader training is most successful when conducted during regular school hours. The type of student often selected to be a peer leader is actively involved in other extracurricular school activities and is not available after school. The logistical difficulties that weekend training presents make this option unrealistic. The excitement generated by being excused from class enhances the special nature of the training. The number and length of training sessions depends on the length and complexity of the program and the role that peer leaders serve in the program. Typically, a five- to six- session drug abuse prevention program requires at least one, three- to four-hour training session. Evaluations on how well training can teach the appropriate skills are presented in another section of this paper.

TEACHER TRAINING

No curriculum, even peer-led, can work effectively or be maintained without the energy and commitment of the classroom teacher. Few teachers have experience in working with the concepts of health promotion and behavior change. Teacher training needs to address these new skills and relieve the apprehensions involved in implementing an innovative curriculum. The training must be comprehensive and informative. It should model the desired approach to program activities and, above all, it needs to persuade teachers that peer-led learning is special.

First, the workshop environment for teachers, like that for peer leaders, must be engaging. The basis is the curriculum. It should appeal to teachers as well as school-age youth to counter negative opinions that students may have about health education. The training facilitators should present these curricula and model the desired interactive and participating teaching styles and methods. The workshop begins with participants introducing themselves. The workshop facilitator asks them a series of questions about their opinions and experience with adolescent smoking, drug use, or health behavior. This approach recognizes the teachers as the real frontline experts.

The second teacher training component is a thorough review of the curriculum. Discussion is initiated with a brief description of the history of the program, the theoretical rationale on which it is based, and a review of relevant outcomes from previous programs. Details discussed in this part of the training session include how to select peer leaders, how peer-led instruction works in the classroom, the logistics of peer leader training, and teacher/peer leader interactions.

Teachers gain hands-on experience in the third component by conducting each activity that they will be implementing in the classroom. The teachers are divided into small groups where they select their own "peer leaders" to implement group activities and to simulate the typical classroom interchange. Participants in this process have the opportunity to practice being a group leader and, at the same time, develop an appreciation of teacher/peer leader interactions. Assuming the adolescent role by each teacher also contributes to the humor and commitment to the training. Teacher training workshops demonstrate that increased interaction with students is not beyond their capabilities, and that interaction will enhance their abilities to teach the subject matter more effectively. The training concludes with an evaluation of the session.

TRAINING THE TRAINERS

During the past several years, school districts that have participated in research projects at the University of Minnesota wanted to incorporate the programs into their general school curriculum. Because many of the programs utilize peer-led instruction, there has been an increasing need to train school personnel to be able to train their own peer leaders. Impetus for training trainers came through the Minnesota State Legislature, when the omnibus Non-Smoking and Disease Prevention Act was enacted in 1985. This statute provides funds to school districts for implementing a comprehensive smoking prevention curriculum. The Minnesota Smoking Prevention Program was endorsed by the Minnesota Dept. of Education, creating a need to train school personnel statewide to train their own peer leaders.

The two objectives of training trainers are to simulate both successful peer leader training and successful teacher-led components. In this way, participants learn through modeling what their role as trainers entails. By the end of the session they are able to train peer leaders in their schools and communities and to teach the program themselves. Again, participants are introduced to the concept of peer leadership by being asked to act as peer leaders. They are divided into small groups and are led through each peer-led activity. The training is scheduled for seven hours. The first half is devoted to simulation, the second half to reviewing the teacher-led components of the program.

PROCESS EVALUATION

Because of the various approaches to peer leader selection and training procedures, as well as the currently extensive training of trainers, evaluating the peer leadership process is important. Evaluation should focus on these five questions:

1) Are we selecting and training the actual peer leaders?
2) Are we training the peer leaders adequately?
3) How does being a peer leader affect the peer leaders?
4) How do nonpeer leaders perceive having peer-led programs?
5) Are the teachers being adequately trained for the program?

Participating students and peer leaders in several interventions have been surveyed during the past few years. With the exception of the "Amazing Alternatives" drug abuse prevention program, these programs are all part of the Class of 1989 study. This is a longitudinal intervention study conducted as part of the Minnesota Heart Health Program.[25] The Class of 1989 study involves two cohorts of adolescents (three education communities, N = 2,700, and one comparison city, N = 1,600) who will participate in educational programs and annual surveys from sixth grade through high school graduation in 1989. Preliminary results from these programs have been published elsewhere.[5,26,27]

Peer-led Health Promotion Programs

Keep It Clean. A seventh grade smoking prevention program implemented in three entire school districts in the upper Midwest. All peer leaders were surveyed during a booster session training.[5]

Amazing Alternatives. A seventh grade drug abuse prevention program implemented in eight schools in the Twin City metropolitan area. Peer leaders were surveyed at the second training session, about half-way through the program.[5] Systematic classroom observation of teachers also was conducted.

Shifting Gears. A ninth grade alcohol abuse prevention program implemented among the same students who received "Keep It Clean" two years previously. Peer leaders and nonpeer leaders were surveyed by teachers after the program was implemented.

Slice of Life. A ninth grade eating and physical activity promotion program piloted in one Twin City suburban school. Nonpeer leaders and peer leaders were surveyed during and after program implementation.

Are we selecting and training the actual peer leaders?

Students were asked if they would have elected the same people if they, at the time of election, had known what the peer leaders would be doing. About 70% of the participating students in the ninth grade programs answered "yes." Not surprisingly, the peer leaders themselves were even more convinced (88%) that they would have elected the same students.

In "Slice of Life," the eating and physical activity promotion program, students also were asked if they considered the election procedure fair. One hundred percent of the peer leaders and 82% of the participating students perceived the procedure as fair. The few who objected to the election felt that it was merely a popularity contest. Interestingly, this way of electing peer leaders (which is essentially a popularity contest) does not seem to be acceptable in other cultures, such as Australia, Chile, Norway, and Swaziland, countries currently participating in the World Health Organization project on alcohol education and young people. This might be due to resistance in those cultures to reinforce the already popular children. However, in a middle-class, U.S. population, this approach seems acceptable and functional.

Are we training the peer leaders adequately?

In two studies, "Amazing Alternatives" and "Keep It

Clean," peer leaders were asked how prepared they felt they were to conduct the different activities they were asked to perform (1 = very able/prepared, 5 = not able/prepared). The same question was asked to both peer leaders and participating students in "Slice of Life." Mean scores for the peer leaders ranged from 2.07 to 2.23, indicating a general sense of efficacy for conducting the activities. Across all three studies "understanding and following the Peer Leader Manual" was the activity peer leaders reported being most prepared to do ($p < 0.05$). The two activities they reported not being as well prepared for were "keeping the groups quiet" and "getting everyone to participate" ($p < 0.05$). These require social interaction skills that are difficult even for most teachers as well as peer leaders and that certainly needs to be more strongly emphasized in the training. Reducing the number of students per peer leader might help strengthen these areas. In "Slice of Life," a more complicated ten-session eating pattern and physical activity program, participating students reported that the peer leaders were less prepared to implement the program than peer leaders themselves reported. However, the peer leaders and the students agreed about the strengths and weaknesses of the peer leaders' skills. Overall, peer leaders and participating students reported the training to be adequate for the teaching required of the peer leaders.

> ***". .. Peer leaders .. . were asked if they would recommend other students to become a peer leader if they had the opportunity; 75% to 89% said "yes. " They reported that being a peer leader had been "fun" and a "good learning experience . . . "***

How does being a peer leader affect the peer leaders?

Johnson et al[28] found that same-age tenth grade peer opinion leaders (elected based on students' respect for their opinions and willingness to have them as their small group leaders) in a smoking prevention program may actually have increased their drug use as a result of being a peer leader. Uncertain as this conclusion may be, it indicates a need for further investigations of the consequences of peer leadership. In none of the studies reported here have formal outcome data been analyzed with respect to whether or not the participating student was an elected peer leader.

Peer leaders in "Keep It Clean," "Amazing Alternatives," "Shifting Gears," and "Slice of Life" were asked if they would recommend other students to become a peer leader if they had the opportunity; 75% to 89% said "yes." They reported that being a peer leader had been "fun" and a "good learning experience." Students who would not recommend others to become peer leaders often gave responses such as "they wouldn't be able to handle it," rather than expressing negative feelings toward their own peer leader experience. At least for seventh and ninth grade students, being an elected and trained peer leader is a positive experience whether the program is focusing on smoking prevention, drug abuse prevention, or promoting healthy eating and physical activity.

How do participating students perceive having peer-led programs?

This general enthusiasm for peer leading also is indicated by the response to the question: "How would you rate having peer leaders teach part of the program?" On a scale from 1 to 5, the peer leaders in "Shifting Gears" and in "Slice of Life" reported that they really liked it (1.85 and 1.54). The participating students also liked having peer leaders (2.05 and 2.31), but significantly less so for "Slice of Life" than did the peer leaders themselves ($p < 0.05$). These data indicate that the general student population feels positively about having classmates serve as peer leaders and co-teachers of the programs.

Are we training the teachers adequately for the program?

Systematic classroom observation was conducted as part of the "Amazing Alternatives" program. The teachers were evaluated based on interaction with the peer leaders and the rest of the class, and on whether the implemented the curriculum according to protocol. Outcome data from this study is not available yet, but some preliminary analyses indicate that drug use outcomes depend on teacher performance. That data, when available, will help guide future teacher training.

Summary

The data presented are all based on pilot work and process evaluations; no firm conclusion can he made about the efficacy of peer leadership or about the selection and training of peer leaders and teachers. Nevertheless, peer-led instruction can be promoted as part of drug abuse prevention programs for these reasons:

- There is strong theoretical support for using peer leaders.
- Students can be identified to serve as appropriate role models.
- Elected peer leaders can be trained, even in large-scale projects.
- Peer leaders, as well as other students, report the training to be adequate for the required activities.
- A substantial number of students are provided with additional health education experience.

- Teachers can be trained to interact effectively with peer leaders.
- Teachers can be trained to train their own peer leaders.
- Peer-led drug abuse prevention programs can be incorporated into general school curricula.
- Peer-led instruction has been demonstrated to be an effective vehicle for drug abuse prevention among adolescents.

These reasons are intended—more than anything—as an invitation to discuss them for future drug abuse prevention programs.

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IV. KEY CONCEPTS IN ADOLESCENT HEALTH BEHAVIOR

The Theoretical Concept of At-Risk Adolescents

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The ability to identify adolescents who may initiate health-damaging behaviors during adolescence requires a basic understanding of the mortality and morbidity patterns of the second decade of life, an integrated view of the biological and psychosocial processes of adolescence and how they interact with the environment, and the views adolescents ascribe to risk. This article reviews the concept of risk taking during adolescence and presents a theoretical model for understanding the mechanisms for the onset and maintenance of risk behaviors.

DEFINITION OF RISK-TAKING BEHAVIOR

The term risk taking is increasingly used to describe the patterns of behavior initiated during adolescence which are responsible for the majority of negative health outcomes occurring in the second decade of life. Behaviors associated with violent outcomes (e.g., homicide), psychiatric disorders including suicide and eating disorders, vehicle use, sexual activity, and substance use are generally included under the construct of risk taking. Our classification of risk-taking behaviors includes *only* behaviors that result from an interaction of the biopsychosocial processes of adolescence and the environment.[30,46] We deliberately exclude behaviors that are inherently pathogenic (e.g., psychiatric disorders) and behaviors that are primarily a result of the environment (e.g., homicide and intentional injuries).[29,35]

Behaviors associated with some of the major mortalities and morbidities of adolescents share a common theme: *risk taking*. Our definition of risk taking includes only volitional behaviors in which the outcomes remain uncertain with the possibility of an identifiable negative health outcome. Young people with limited or no experience engage in behaviors with anticipation of benefit and without understanding the immediate or long-term consequences of their actions.[29,31,35]

Three behaviors fit our definition:

- sexual behavior
- substance use
- motor/recreational vehicle use

These behaviors are initiated during early adolescence with a marked increase in frequency from early to late adolescence, are prevalent in all socioeconomic and racial/ethnic groups, differ by gender and racial/ethnic groups, and account for the majority of morbidity during adolescence.[6,31,36,38,39] Mortality patterns and hospital discharge rates further support the importance of injuries. Motor/recreational vehicle use resulting in unintentional injuries accounts for greater than 50% of the mortality during adolescence.[2,4,39] Hospital discharge rates also indicate that traumatic injuries and substance use account for the two largest discharge categories when one excludes pregnancy.[26] The prevalence of these three risk behaviors has remained high over the past decade. Currently many clinicians consider these risk behaviors normative in spite of the well-recognized short- and long-term health problems.[27,39] Increasingly, there is a recognition of the covariation of these three behaviors, with some investigators postulating a developmental trajectory of behaviors.[27,33]

MORTALITY

Specific mortality rates for the second decade in 1985 were as follows: for early adolescents (ages 10-14): 34.9/100,000 and for older adolescents (ages 15-19): 114.7/100,000.[50,51] Between early (ages 10-14) and late adolescence ages 15-19), mortality rates increase by over 300%. This increase in mortality is the largest increase of mortality in any two consecutive age cohorts. Violent causes of death are responsible for this increase, with motor vehicle injuries increasing by 400%, homicide rates by 400% and suicide rates increasing by 600%. Gender and race are important demographic factors that influence the etiology of death. Male adolescents die at twice the rate of adolescent females.[31,49-51]

MORBIDITY OF RISK-TAKING BEHAVIORS

Sexual Behavior

Sexual activity (i.e., coitus) has increased dramatically from 1971 to the early 1980s.[23,24] In the most recent survey of 1983, 77.9% of males and 62.9% of females had experienced intercourse by 19 years of age. These percentages run higher for Blacks (92.2% for males and 77.0% for females) and Hispanics (78.5% for males and 58.6% for females).[23,24] Recent reports concerning coital activity of adolescents younger than 15 years range from 12% to 55%.[31,36,43,53,73] Little is known about sexual behaviors other than coitus, including homosexual activity, in adolescents.[9]

Substance Use and Abuse

High rates of substance use during adolescence have been documented in national surveys since 1975.[42,49] The 1988 adolescent lifetime prevalence rates of marijuana and cocaine use are 47.2% and 12.1%, respectively. These rates have declined markedly since the peak for marijuana use in 1979 and cocaine use in 1985. The use of crack and cocaine as reported by Johnston and colleagues probably underestimates the frequency of use because adolescents not in school probably have higher rates of use. The rates of cigarette and alcohol use in 1988 continue to remain high at 66.4% and 92%, respectively.

The 1988 daily use of cigarettes is reported by 18.1% of high school seniors, with 10.1% reporting smoking more than half a pack per day. Females consistently report greater daily use than males since 1978.[42] Twelve years is the mean self-reported age of onset.[14,36] In addition to the high prevalence of daily smoking in high school seniors, there is evidence to suggest that boys are using smokeless tobacco as an alternative to cigarettes.[15,25]

Alcohol use remains the most commonly used substance. Daily use of alcohol in 1988 remained high at 4.2%, with 34.7% of high school seniors stating that they had five or more drinks in a row in the previous two weeks.[36,42] Alcohol consumption also begins early in adolescence, with a mean age of onset of 12.6 years.[36,42] Males consistently reported more frequent and heavier use by a factor of 2 to 1.

In 1988 daily use of marijuana by high school seniors was 2.7%. Mean age of onset of use is 14.4 years.[36,42]

Motor/Recreational Vehicle Use

Unintentional injuries are the primary cause of mortality in adolescents, accounting for 60% of the deaths in this age group. Motor vehicle injuries account for 80% of these deaths.[2,47,50,51] The peak time for vehicular accidents among late adolescents occurs on weekends and late at night. Life style factors appear to be primary forces in the injury situation at these times. Acute nonfatal injuries account for the largest number of hospital days for both adolescent males and females and for approximately 16% of outpatient visits.[26] Increasingly, studies have documented that children as early as 10 years of age report engaging or being dared to engage in risky behaviors such as fights and skateboard and bicycle use.[36,44] The National Adolescent Student Health Survey (1987) reports that over 50% of students did not wear a seatbelt the last time they rode in a motor vehicle, 92% never wear a helmet when riding a bike, and 72% never use a light at night when riding a bike.[1] These data support the lack of basic preventive behaviors during adolescence.

COVARIATION OF RISK BEHAVIORS

Risk behaviors tend to be associated with each other in predictable ways. Currently, investigators are focusing on the covariation of behaviors and outcomes and the mechanisms by which specific behaviors are interrelated.[3,18,30,31,40,41,44,68,69]

Substance use is positively correlated with early initiation of sexual behavior. Jessor and Jessor used drinking status as a marker for at-risk youth and found that 80% initiated marijuana use and more than 50% initiated sexual intercourse.[39,40,41] Other investigators have documented the association of early sexual activity and ineffective contraceptive use with use of cigarettes or alcohol.[24,48,75] In our own studies, we have documented the association of risk behaviors (e.g., substance use, dangerous vehicle use, etc.) reported by white females correlates positively with their intention to become sexually active.[43]

The association of alcohol use and unintentional injury is well established. Alcohol-related motor vehicle injuries remain the leading cause of mortality in late adolescence.[12,45] Alcohol is also associated with a large number of injuries including nonmotorized vehicles (e.g., bicycles and skateboards), drownings, falls, and fires.[12,20] The role of other substances in unintentional injuries remains to be established.

Within the area of substance use, substances are associated in predictable ways. Alcohol and/or tobacco use predict the use of illicit substances. Kandel and colleagues have documented the progression in a cohort of adolescents followed through young adulthood.[74] The sequence of progression is as follows: alcohol, cigarettes, and marijuana precede other illicit substances (including psychedelics, cocaine, heroin, and other nonprescribed stimulants, sedatives, and tranquilizers), and the use of prescribed psychoactive drugs follows all other illicit substances. Cigarettes appear to be the drug of initiation for females. Recently, a five-year longitudinal study has monitored the initiation of cocaine use and its association with other substances. Alcohol use in the preceding year was an important predictor of marijuana use. Marijuana use in the preceding year was an important predictor of cocaine use in the following year.[52]

The short-term and long-term health-damaging consequences of risk-taking behaviors are well documented. For a comprehensive review of the effects, see Irwin and Ryan, 1989.[36]

Biopsychosocial Development During Adolescence and Risk Taking

Adolescence is a developmental period in the life cycle in which significant changes occur in biological and psychological processes, including cognitive, affective, and social change. Major developmental changes occur which interact with the biopsychosocial processes. Risk-taking behavior emerges as a normal component of adolescent biopsychosocial development. Experimentation with a range of behaviors is critical for healthy development of the adolescent, especially if the young person is to learn how to take initiative.[3,27] The challenge for the clinician is to distinguish between normal transitional risk-taking behaviors that are developmentally enhancing and those same behaviors that by their frequency and intensity may become pathogenic behaviors.[28]

Increasingly, there is evidence that testosterone in males plays a signifcant role in the onset of sexual behavior and other risk behaviors.[68,69] The role of other sex hormones in the onset of risk behaviors remains unclear at this time.[65] Even though puberty begins with biological changes, the psychosocial significance of puberty is an important determinant of how the experience of puberty is translated to and experienced by the teenager. Research examining the onset of puberty has shown that physical maturation is associated with changes in family interactions, parental feelings, peer relationships and expectations, patterns of intimacy, heterosexual interests, and behavior and educational achievements.[7,8,10,30,54,59,61-63]

The asynchronous nature of biological, psychosocial, and environment changes appears to have an effect on the onset of risk taking in adolescence.[30] A brief review of the psychosocial effects of the timing of biological maturation is necessary to understand how these effects may encourage the emergence of risk behavior.

Two cohorts of adolescents may be most affected by the rapid biological, psychological, and environmental changes during adolescence: early pubertal developers and late pubertal developers.[7,10,19,30,37] These terms are used to describe relative changes of maturational status and not pathological events of maturation. These two groups provide us with further understanding of the complex interrelationship of biological and psychosocial development.

The earlier maturing female reaches adult biological status earlier than any of her female or male counterparts. Earlier maturing females exhibit more dissatisfaction with their physical characteristics, have lower self-esteem, and show greater general unhappiness.[7,10,30] These girls appear to enjoy greater social prestige from older boys; however, they get less recognition from same-sex peers. The social networks of early maturing females include older adolescents of both sexes.[7,10,30]

Earlier maturing girls experience developmental needs at an earlier age than normal or late maturers. Earlier maturing girls show early heterosexual interests and behavior, have earlier identity crises, and show greater interest in independence and decision making.[7,10,30] In addition, they achieve less success in academic endeavors and have a greater prevalence of problem behavior in school.

True precocious puberty in females (onset prior to age 8) provides some insight into the effects of pathological timing in that children undergo pubertal changes long before their age-related peers. Research has demonstrated that girls with precocious puberty are more troubled, depressed, aggressive, socially withdrawn, and moody.[64]

These documented psychosocial effects give early-maturing girls the proclivity for initiating risk behaviors. For these adolescents, usually limited cognitive experience is combined with increased needs pertaining to independence, including heterosexual initiative, and social networks consisting of older adolescents. The social environment encourages these adolescents to behave more like adults in a social milieu without the requisite skills to master these situations. We have documented the effects of early maturation (e.g., menarche) and premature initiation of sexual activity with higher rates of sexually transmitted diseases.[34,37] Increasingly, research is documenting that early adolescent males are at risk for initiating premature sexual activity and other risk behaviors.[34,73]

Late-maturing girls appear to enjoy a psychological and possible protective advantage from the immediate and extended environment with familial support and a social network of peers of the same age or younger.[30,37]

The late-maturing boy develops later physically than any of his male or female peers. Research consistently has shown the late-maturing boy may be at a social disadvantage compared with other boys. Late-maturing boys exhibit a more negative self-concept and body image than other boys. In addition, these boys have a greater frequency of major identity crises.[10,19,30] Peers see them as being less masculine in behavior, unathletic, and unpopular. Behaviorally, late-maturing boys have been described as more rebellious and impulsive than other boys, but they have also been described as being expressive and dynamic.[30] During the high school years, when physical differences are greatest between late-maturing boys and others, the stress of being out of synchrony with one's peers is likely to be at its greatest. Without the attributes most highly valued by peers, the late-maturing boy may be particularly prone to engage in risk taking. Currently no research has documented the association of late maturation with rates of risk-taking behaviors. In fact, some research is pointing out that late-maturing boys may experience the same protective advantage as late-maturing girls.[34]

Environmental Changes

Major environmental changes that are maladaptive and developmentally inconsistent may take place in the school system. Several researchers have documented the stressful nature of these transitional events.[22,58] Simmons and Blyth have consistently demonstrated more negative behaviors in students who had their environment disrupted at grade 6 or 7 by a transition to middle or junior high school instead of remaining in a K-8 school.[58]

Timing of Puberty and Its Biopsychosocial Correlates

Research on the timing of maturation, precocious puberty, and environmental change has reported fairly consistent findings. The impact of puberty and its timing appear to have the greatest effects in the areas of self-conceptions (body image and self-esteem), developmental needs (heterosexual relationships, peer affiliations, family independence), school performance (academic performance and problem behaviors), and environmental responses (peer, parental, and teacher expectations). These effects vary as a function of: (1) gender, (2) the relationship of the individual's pubertal status to that of his or her peers, (3) definitions of early and late timing, and (4) the behavior under investigation. In general, the most negative effects have been reported for early-maturing females. Some recent work has shown that the effects of early maturation may be detrimental for both sexes, with early maturation in males being associated with the early initiation of sexual activity and other risk behaviors.[34,73]

PROPOSED CAUSAL MODEL OF RISK-TAKING BEHAVIOR

We have reviewed three risk-taking behaviors that have their onset in adolescence, the interrelationships of these three behaviors, and our current knowledge regarding the biopsychosocial changes of adolescence that may influence the onset and maintenance of these behaviors. As stated in the previous section, there appear to be specific areas of psychosocial development in which the effects of timing of biological maturation have their greatest impact.

Figure 1 depicts a proposed causal model of adolescent risk-taking behavior that illustrates how timing of biological maturation may affect specific psychosocial changes and the onset of risk-taking behavior. Our model proposes that timing of biological maturation directly influences four psychosocial factors: cognitive scope, self-perceptions, perceptions of the social environment, and personal values. These four factors are hypothesized to predict adolescent risk-taking behavior via the mediating effects of risk perception and peer group characteristics.[30]

How adolescents view risk is critical in understanding the final pathway for onset of risk taking. Because adolescents have often been viewed as "invulnerable" or as having little or no knowledge about the risks associated with certain behaviors, one of our first investigations of middle and high school students was done to elucidate if adolescents were capable of making differential judgments of certain risk behaviors.[31,32] Approximately 250 adolescents were queried about their perceptions of risk regarding 11 behaviors and how risk changes with advancing age. The 11 behaviors we selected were:

- drinking beer/wine
- drinking hard liquor
- smoking cigarettes
- using drugs
- being a passenger in a car when the driver has had a few drinks
- being a passenger in a car when the driver is driving too fast
- riding a bike or skateboard recklessly
- having sexual intercourse

not seeing a physician for a health problem

- eating poorly
- not exercising

Subjects perceived drug use as being the most risky to their health; however, they perceived all behaviors as having at least moderate risk. In order to examine how risk changes with age, adolescents were asked to anticipate how the risk of certain behaviors would change with advancing chronologic age. Having sexual intercourse and

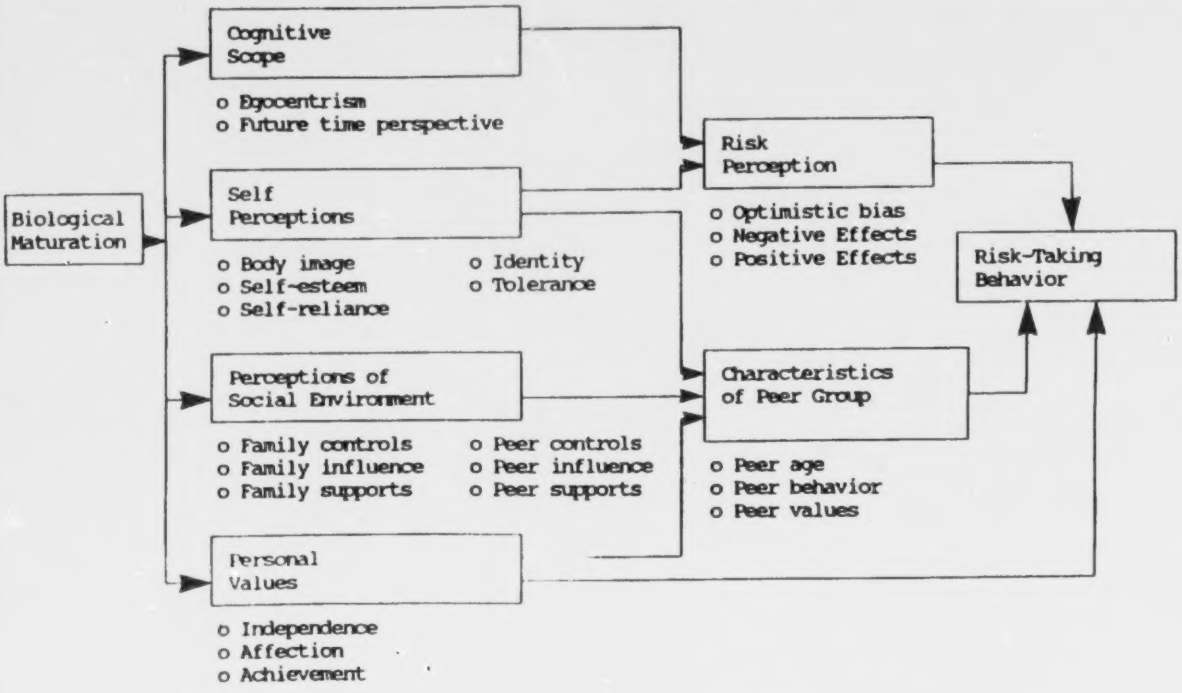
Cognitive Scope
o Egocentrism
o Future time perspective
Biological Maturation
Self Perceptions
o Body image
o Self-esteem
o Self-reliance
o Identity
o Tolerance
Perceptions of Social Environment
o Family controls
o Family influence
o Family supports
o Peer controls
o Peer influence
o Peer supports
Personal Values
o Independence
o Affection
o Achievement
Risk Perception
o Optimistic bias
o Negative Effects
o Positive Effects
Characteristics of Peer Group
o Peer age
o Peer behavior
o Peer values
Risk-Taking Behavior

FIGURE 1. Causal model of adolescent risk-taking behavior. (Modified from Irwin CE Jr, Millstein SG: Bipsychosocial correlates of risk-taking behaviors during adolescence. J Adolesc Health Care 6:895, 1986.)

smoking cigarettes were viewed as becoming less risky with age by greater than 50% of the sample. Not seeing a physician when you have a health problem and not exercising were seen as becoming more risky with advancing age by 50% of the sample. Four behaviors (drive and drink, drive fast, reckless vehicle use, drug use) were reported as remaining the same risk by greater than 50% of the sample. In addition, older and more physiologically mature adolescents perceived less risk from all the behaviors than younger and less physiologically mature adolescents.

Perceptions of diminished risk in older adolescents may reflect actual differences in the prevalence of these behaviors as a function of age. Studies on risk perception in adults have shown that individuals who engage in risk behavior actually perceive diminished risk.[72] Perception of less risk by older adolescents may reflect perceptions formed at an earlier age. Greater than 50% of this sample perceived the risk of cigarette smoking and sexual intercourse as being lower for older people. This anticipatory risk assessment could account for some of the variance in actual risk assessments. Although data from this study do not provide information about developmental changes in risk perception, the cross-sectional associations between risk perception do correspond to some of these anticipatory perceptions.[31]

Figure 2 integrates our causal model with the other associated factors described in the literature[4,17,25,30,36,40,56,59,63,64,66,77] (see Irwin and Ryan 1989 for extensive discussion of model). The model highlights endogenous biopsychosocial factors and exogenous environmental factors. The model further identifies the role of predisposing factors that increase the vulnerability of the adolescent and precipitating factors that are immediate and may encourage the adolescent to initiate the behavior.

Biopsychosocial Factors

Biopsychosocial factors that are critical include male gender, role modeling, affective states including sensation seeking and depression, aggressiveness, self-esteem, and developmental drives during adolescence. Attitudes, perceptions, and motivations all predict the onset of behaviors. Personality factors that have been identified include high value on independence, decreased expectation for academic performance, and less involvement in conventional activities such as religion. Generally decreased cognitive competence has been associated with onset of behavior; however, some investigators have demonstrated the risk of increased competence and onset of risk behaviors.[3]

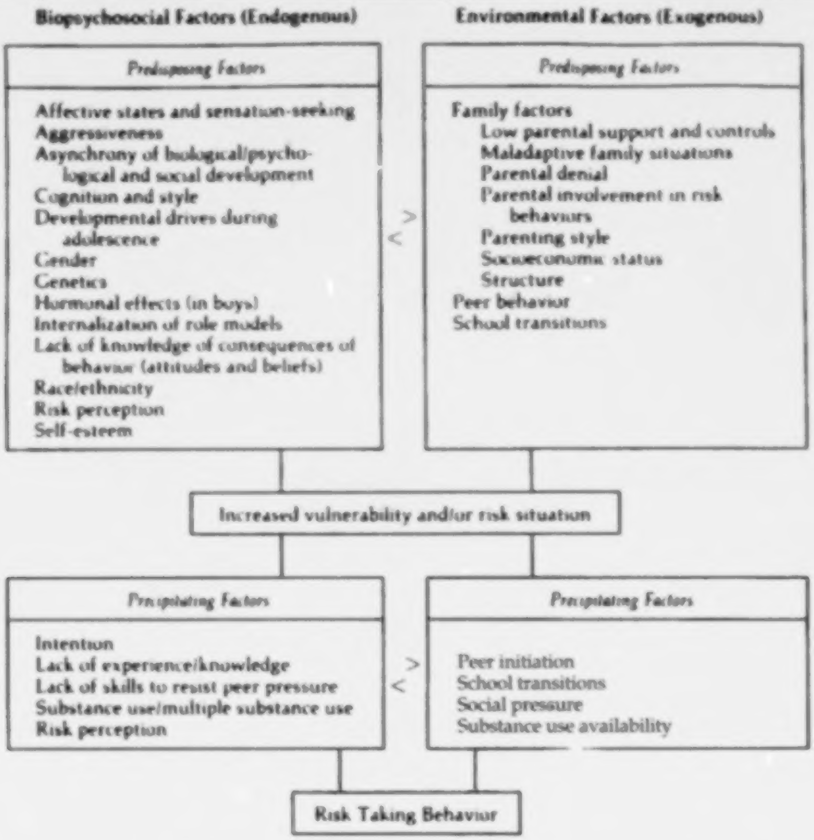
Biopsychosocial Factors (Endogenous)
Environmental Factors (Exogenous)
Predisposing Factors
Affective states and sensation-seeking
Aggressiveness
Asynchrony of biological/psychological and social development
Cognition and style
Developmental drives during adolescence
Gender
Genetics
Hormonal effects (in boys)
Internalization of role models
Lack of knowledge of consequences of behavior (attitudes and beliefs)
Race/ethnicity
Risk perception
Self-esteem
>
<
Predisposing Factors
Family factors
Low parental support and controls
Maladaptive family situations
Parental denial
Parental involvement in risk behaviors
Parenting style
Socioeconomic status
Structure
Peer behavior
School transitions
Increased vulnerability and/or risk situation
Precipitating Factors
Intention
Lack of experience/knowledge
Lack of skills to resist peer pressure
Substance use/multiple substance use
Risk perception
>
<
Precipitating Factors
Peer initiation
School transitions
Social pressure
Substance use availability
Risk Taking Behavior

FIGURE 2. Principal factors in risk-taking behaviors. (Modified from Irwin CE Jr, Millstein SG: Biopsychosocial correlates of risk-taking behaviors during adolescence. J Adolesc Health Care 6:93S, 1986; and Irwin CE Jr, Ryan S: Problem behavior of adolescents. Pediatr Rev 10:235-246, 1989.)

Biopsychosocial Factors (Endogenous)

Precipitating factors in the biopsychosocial area include substance use and lack of experience and knowledge associated with lack of skills to resist peer pressure. Most importantly, intention to engage in behavior is critical for initiation.[33,34]

Environmental Factors

The role of the environment is an important predictor in the onset of risk behavior. The protective role of supportive environments during adolescence must be acknowledged and may be critical in developing prevention and intervention programs.[27] Family and peer factors are crucial, with parental behavior and style being important correlates of onset. Increased parental involvement appears to prevent the onset of risk behaviors and mitigates the most negative outcomes of risk behavior.

Precipitating factors include substance use availability, peer onset of risk behavior and the social pressure associated with onset, and multiple social transitions, including school.

Conclusion

Risk-taking behavior as described in this paper is purposely limited to volitional behaviors in which the mechanism for onset and maintenance result from an interaction of the maturational forces of adolescence and the environment. The individual behaviors (sexual behavior, substance use, and vehicle use) are often interrelated and the mechanism for onset may be similar. As pointed out in Figures 1 and 2, the mechanism for onset is complex and there are several pathways by which adolescents may initiate risk behaviors. It is critical for the clinician to recognize that a single behavior may serve as a warning sign for the clinician to query the young person about other risk behaviors that may have even greater negative health consequences. Because intention to engage in a behavior is one of the most powerful predictors of initiation, simple questions regarding intention need to become a routine component of the clinical encounter for all youth from late childhood. Recently the U.S. Preventive Services Task Force Report on Clinical Preventive Services emphasized the importance of counseling on substance use, sexual practices, and injury prevention in the 13-18 year age category.[55] It is important to recognize that the major causes of morbidity and mortality which are initiated during adolescence persist through early adulthood (19-39 years). Therefore, the role of the clinician in early identification of those at risk for initiating behaviors and those actively involved in risk-taking behaviors is fundamental for health maintenance long after adolescence.[21]

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The Role of Affect and Social Relationships in Health Behavior and School Health Curriculum and Instruction

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For nearly 150 years, the importance of health education has been recognized, and for almost the same length of time, it has been clear that health education belongs in school.[1,2] While much has been accomplished, health education once again is under a paradoxical form of pressure: it is being called upon to help stem the tide of such serious public health problems as substance abuse, irresponsible sexual behaviors, and AIDS, and it also is being crowded out of school curricula to make way for more so-called academic content and skill-building activities. That the former should occur is well justified. Reviews of empirical studies of health education programs show that when they are implemented rigorously and in accordance with provided guidelines for curriculum and instruction, they provide knowledge, attitudes, and skills needed to engage in behaviors linked to positive health outcomes.[3] That the latter should occur is somewhat mystifying in light of potent economic arguments about the benefits of school health education to public health, national economy, and, in the truest sense of the term, national security.[4]

It also has been shown that efforts to "cut corners" in health instruction or to engage in *pro forma* efforts with breadth of coverage but insufficient depth or instructional time are, at best, erroneous, and at worst, a dangerous and irresponsible public deception.[5-7] Out of a recognition that public health needs could not be met in a climate of decreasing commitment and resources for school health education, the National Commission on the Role of the School and Community in Improving Adolescent Health was convened in June 1989 to analyze the relevant issues and catalyze and sustain appropriate, forceful action.

To move ahead will require that the various fields concerned with school health education do more than reiterate past arguments. Many thoughtful and comprehensive models and guidelines have been promulgated and outstanding programs have been developed, implemented, and disseminated.[8-12] However, these promising efforts must not lead to complacency. Many students are not yet touched by model programs. For many teen-age parents, adolescents experimenting with drugs, and others, the consequences of poor health decisions reach tragic proportions; to a disproportionate degree, these tragedies are occurring to minorities and the poor.[13,14] It reflects the fact that the nation has yet to put into place the interlocked networks of health promotion, health education, and health care that are necessary to achieve the kind of health goals needed for familial, community, and economic vigor, and social justice.[15,16]

A broad framework for comprehensive school health education has been articulated with considerable consensus.[17] This paper takes as its point of departure the following section of that framework:

> ***"Comprehensive school health instruction provides the cognitive information, behavioral skills, and affective experiences necessary for students to more effectively decide***

which behavior(s) they will choose. The focus is on the processes the student encounters or participates in as well as the final behavioral outcomes"

The focus will be on the area of curriculum and instruction and within that large area, on the role of affect, social relationships, and values relating to health. Critical issues raised at a work group on this topic at the 1989 National Invitational Conference on Comprehensive School Health Programs will be presented, as well as promising ways of addressing these issues. Among the significant challenges which must be addressed are the need to recognize and incorporate an integrative view of the role of affect and social relationships in school health education and health behavior and the design of curricular and instructional procedures with the flexibility to be salient to and effective for an increasingly diverse, multicultural population. Though outside the scope of this paper, a successful effort ultimately will require an analysis of where previous efforts have fallen short and a focused implementation strategy to ensure that sustained change occurs in the way in which health is conceptualized and enhanced in schools and communities.

Before discussing specific recommendations for health curriculum and instruction, assumptions that underlie these recommendations are reviewed. By making the assumptions explicit, it is hoped that the impact of tampering with or diluting the recommendations will become clearer. Moreover, persons concerned with health education must be prepared to examine their assumptions about what will be effective for children and why. Many children are growing up in societal and interpersonal circumstances that differ significantly from those typical of the time during which the research and theoretical bases of health promotion programs were developed.

These assumptions are critical to postulating an approach to a health education curriculum and instructional program that is sensitive to the affective domain of learning and teaching:

1) Health behaviors must be considered in the context of individuals' social relationships and social learning history.[18-21]

2) While distinctions may be made for instructional purposes, there is no functional differentiation of affective, cognitive, interpersonal, and values considerations in determining health decisions and behavior.[22-24]

3) The concept of adolescent identity, heretofore linked with notions of autonomy and independence, is better linked to notions of commitment and interdependence and nondependence on parents. Health behaviors cannot be understood outside of their implications for self as defined by children's developing sense of identity. Further, alienation from positive health values reflects broader alienation in a child's life; both must be addressed if enduring positive change is to result.[25-27]

4) Health behaviors emerge from a health-decision framework that incorporates affective, cognitive, interpersonal, and identity-related elements. These frameworks are not enhanced necessarily by providing children with increasing amounts of information.[28,29]

5) The concept of developmental appropriateness must be extended to include biological maturation and significant events in the levels of children which influence the trajectory of their lives, their concern with health behaviors, and their receptivity to health instruction.[30,31] Children in the 1990s and beyond will be growing up in circumstances that will make traditional norms of developmental appropriateness the exception rather than the rule.

6) Positive health-related values and behavior decisions require at a minimum that children have a strategy for health-related decision-making and relationships with caring adults who can provide a basis for positive health decisions and guidance in that process, particularly when things go awry.[19,20,32,33]

Several points must be made to underscore that these assumptions must be extended with caution to children from cultural and ethnic backgrounds different from the mainstream children whose data comprise the bulk of the research base. Cultural differences in emotional regulation and socialization of emotions have significant implications for interacting with children and families around health issues, including health curriculum and instruction. For example, Puerto Rican families often are characterized by strong familial bonds; the concept of *persona de confianza* reflects strong socialization concerning the conditions under which one shares personal information about themselves or family members.[34] This can create considerable potential for misunderstanding when children and parents deal with schools, even around such seemingly routine matters as family health routines and practices. Similarly, work with black adolescents must acknowledge the history of their feelings about racism and discrimination and appraisal of interactions and situations in ways that might not seem warranted from surface observation.[35]

Further, it cannot be assumed that the learning styles of at-risk and special needs children will allow them to be responsive to mainstream health instruction practices.[36,37] These students are likely to experience disaffection and alienation; this carries with it a likelihood of low motivation and self-esteem, which in turn is linked to alienation from positive health values.[38,39] When teaching at-risk children, one must pay attention to their cognitive orientations, affective abilities, their motivational states, and their value-belief systems, such as their answers to the internal questions, "Does this make sense to me?," "Is this something that I want to learn or do?," and "Is this something that I should learn or do?"

While it is important to be clear about the intricacies and the interrelatedness of elements within the assumptive base, it is more important to recognize that the instructional implications are—and indeed must be—simpler. What follows is a series of recommendations concerning curricular and instructional practices made in response to issues raised at the 1989 National Invitational Conference on Comprehensive School Health Programs and in the position paper on that topic by the National Professional School Health Education Organizations.[17] The recommendations have been developed through a lens focused not on the totality of school health education but rather on the need to enhance affective and social relationship mechanisms that are integral aspects of that education. The recommendations are designed to unite affective, social, and cognitive mechanisms in a synergistic manner reflective of their joint operation in health-related decision processes and actions.

ESSENTIAL COMMON DENOMINATORS IN HEALTH EDUCATION CURRICULUM AND INSTRUCTION

Knowledge of child and adolescent development suggests most strongly that positive health outcomes require curricula that reflect how children's affective and cognitive growth occurs in the dynamic and evolving context of ongoing social relationships in students' lives. Acquisition, retention, and application of the content of health education and of the beliefs, attitudes, and behaviors consistent with a wellness orientation to living is mediated by the nature of the relationship contexts in which the learning takes place. What this suggests is that instruction be given at least as much emphasis as curriculum because effective learning is unlikely to occur outside of children feeling engaged in the instructional process. This is not uniquely true of health education, but it is especially true of that field because the content and behaviors that are the focus are, ultimately, so personal and interpersonal in nature.

Given the size and diversity of the United States, it is paradoxical but true that excellence is most likely to be achieved by identifying acceptable common denominators in curricular and instructional procedures—what has been referred to as "the state of the art of feasible practice."[40,41] True reform occurs by raising this common denominator, which is a slow, painstaking process, a full discussion of which is beyond the scope of this paper. Nevertheless, it is important to identify points which, whether or not they are the current state of practice, form the threshold that is necessary for minimal effectiveness in comprehensive school health education.

Continuity. Health behaviors will be influenced by more than health knowledge. To ensure continuity of learning-for-application from prekindergarten through grade 12, children must be given concepts, frameworks, and strategies that will be consistent despite changing curricular content and changing instructors. Rather than implicitly relying on children to provide the curricular integration and continuity, educators must ensure that what is taught builds on and is consistent with prior instruction.

Coordination. Because health behavior is such a pervasive part of life, it is essential that the various socializing agents who relate to children around their health behavior have a common understanding of the curricular and instructional approaches being used. This includes coordination within schools (teachers, nurses, administrators, school aides, and coaches) and beyond the school walls (parents, agencies which serve the schools, public health clinics, local pediatricians, law enforcement personnel, child advocates, legislators, and the media). Children should not be solely responsible for having to reconcile the vast array of health-related messages which bombard them regularly.

Flexibility. Changing health knowledge and priorities require that health education content be flexible. In recent years, the AIDS crisis, concerns about smoking, and new knowledge about nutrition have become necessary parts of school-based programs. Flexibility also refers to the fact that children reach developmental milestones at somewhat different times, and that curricular and related procedures must be able to incorporate responsiveness to trajectory-salient life events and stressors. During periods of disequilibration, identities are often threatened or undergo change. At these times, it is most likely that changes in utilization of health knowledge will occur.[27,31] Provisions must be made in the curriculum to acquaint children with fairly predictable events that are associated with disequilibrium (parental separation/divorce, severe illness in family members, academic or social failure in school, and changes in one's economic circumstances), as well as with whatever special supports are available as part of school-based health services and community health programs.

Salience. School health education must appear meaningful and relevant to the everyday lives and responsibilities of children. Under these conditions, learning and performance are incorporated and contributory to a value of wellness. The idea of salience extends not only to curricular content but to methods. Salience is maximized to the extent that the identity and learning styles of children are engaged and learning behavior is rewarded in the here-and-now, rather than over-relying on the salience of preventing long-range negative outcomes as a motivator.

Engagement. School health education occurs in the context of many other school activities, as well as in a context of family, community, religious, and media messages concerning health. Ongoing life events and developmental changes form a further backdrop against which school health education learnings occurs. Clearly, educators cannot assume that the subject matter has so much intrinsic appeal that students will put aside other concerns and fully absorb what is presented to them. Particularly for special needs children and children from cultural and ethnic minority groups—who, as a group, comprise the majority of students in an increasing number of schools—it is important to ensure that explicit procedures are used to engage a maximum number of learners in the curriculum and instructional process.

These principles are consistent with an overarching recommendation of persons working with special needs students:[6,38,39] for the purposes of curriculum and instruction, particularly as outlined in this paper, *all children should be treated as "at-risk" children*. Functionally, it would mean that the following common denominators would be proactive, guiding forces for all children, prekindergarten through grade 12: ensure that what is taught in school has relevance to students' lives; clarify the cognitive connections across subjects and between school learning and "real life;" teach explicit frameworks so students have the ability to make informed, responsible, and lawful decisions that enhance personal and societal health; enhance self-worth and positive motivation; foster positive attachment to various aspects of school life; and establish for each student a continuous caring relationship with someone in the school, especially someone who is determined that current and accurate health-related information will be conveyed to the student in an engaging manner. It is difficult to envision a successful comprehensive school health education initiative that is not accompanied by the presence of this kind of educational "common denominator" in schools.

CRITICAL ISSUES IN CURRICULUM

How can the content of curricula be organized to reflect the link of affect, cognition, and social relationships as elements in all health-related knowledge and behavior?

Convey wellness as a priority and value. Curricula are best viewed as the place to introduce health-related concepts. Based in notions of wellness and healthy lifestyles, curricula convey the value that positive health is necessary to be a fully functioning adult and to succeed in college or the work world.[41,42] Specific instructional periods are necessary to provide key orienting concepts, discussion, and guided practice. Ultimately, however, carryover of health-related concepts and content into everyday classroom routines will be essential for maximal retention and flexible application of what is presented to students. In essence, the true "health program" is life.

Provide a link to other health services. Curricula can serve as the gateway and preparation for access and utilization of other parts of a comprehensive school-family-community health services network. Specific functions include introducing other school health components and serving as a vehicle for setting norms for acceptable use of services, such as the school nurse, the availability of a doctor, screenings, when to seek help, and liaison with other services.

Emphasize promotion, not remediation. Curricula may best serve the goals of health promotion and primary prevention; it is unlikely that curricula will be sufficiently potent to change entrenched patterns of highly negative health behaviors. Curricular priority may best be placed in the "upcoming" cohorts, rather than in the current cohorts of troubled, disaffected teenagers. Troubled youth should be prioritized for efforts involving school health services and community services and linkages emphasizing secondary preventive or early identification.

Focus around hub areas. Curricular focusing is necessary and can be accomplished through the concept of core areas or curricular "hubs." Data suggest health education benefits are greatest from completed, intensive programs that are multifaceted and incorporate cognitive, behavioral, and affective elements. According to knowledge network and decision frame and schema theories, learning based in the content of the hub areas and the accompanying instructional processes and relationships radiates to other areas and fosters maximal generalizable impact.

Link hub areas to health routines and occurrences. Possible hub areas include self-care, relationship with parents and siblings, focusing on communication, nutrition, heart health, positive fitness, smoking, alcohol and driving, and consequences of inappropriate sexual behavior and of drug use. In general, hub areas should be linked to routines and developmentally salient life/ health issues. While hub areas can be shifted, some multiyear continuity should exist because the critical period around health occurrences often are broad.

Build hubs on sound materials. Hubs can be based on well-developed and acclaimed curriculum materials; some recent examples include Growing Healthy,[43] Life Skills Training,[44] Project STAR,[45] programs for AIDS prevention[46] and cardiovascular health promotion,[47] American Cancer Society Youth Education Program,[48] New York State Mentoring Program,[49] Nutrition Education Curriculum[50] and materials to improve students' Social Decision-Making and Problem-Solving.[51]

Combine consistency, local flexibility. The choice of "hubs" is likely to be based on local norms, though state or federal education authorities could mandate one or some in various combinations such as prekindergarten through grade 12 hubs dealing with nutrition and cardiovascular fitness, thus allowing a combination of consistency and local flexibility. Planning input around hub selection should be broad and include not only the groups typically identified as part of Health Advisory Councils but input from students at high school and middle school levels. It is generally recommended that districts first seek to adopt or adapt the abundant existing materials, and then create if necessary.

Have clear roles for parents. Curricula should specify ongoing and clear, feasible roles for parents; these should include parent education and parent involvement, an emphasis on practical issues of direct salience to parents with a developmental prekindergarten through grade 12 scope such as nutrition and exercise information, basic child development information, handling of health routines, adolescent experimentation with smoking, alcohol, and drugs, and sensitive explication and incorporation of multicultural considerations.

Link to age levels to increase salience. To maximize depth and continuity, curricular organization should center around hub topic areas at three or four age levels, such as prekindergarten to first grade, grades two-four, middle school, and high school. It should contain conceptual and instructional principles that extend across age domains, and perhaps from prekindergarten through grade 12, and allow flexibility to work with what is salient to a given group of students at a given time. Such an approach emphasizes the professionalism of all teachers and instructional and curricular leadership from health educators and building administrators.

Use multiyear sequences to increase continuity. In a study of health curricula, Walberg[7] found that in grades four-seven, health knowledge begins to improve after 15 hours of instruction, 45-50 hours are needed to begin to affect attitudes and practices, with maximal learning and application seemingly occurring in those grades after about 60 hours of instruction in a given year. Given that health-related information and attitudes must be reintegrated at various developmental periods and the evidence that learning is maximized in the context of ongoing relationships—which sometimes take the better part of an academic year to develop—one possibility for a curriculum structure is to plan two-year health sequences.

The first year in each sequence would focus on knowledge and attitude domains; the second year in each sequence would focus on the application domain. To maximize continuity and engagement, students might have the same teacher for health during that two-year period and those students could be grouped to the extent feasible. In the context of the elementary school, health might be team-taught by teachers in adjacent grades in two-year units, or continuity may be provided by having a designated health educator provide instruction teamed with the child's primary classroom teacher. To provide for continuity across curricular sequences within and among schools, health instruction should include concepts and frameworks that can be used at all grade levels to help students analyze health-related problems and make health-related decisions.

CRITICAL ISSUES IN INSTRUCTION

What instructional procedures are necessary to ensure carryover of learning into health-related behaviors and practices?

Explicit strategies. To achieve the consensual goal that a necessary outcome of school health education acknowledges students have the ability to make informed, responsible, and lawful decisions that will enhance personal and societal health, it is necessary to teach children explicit strategies for social/health decision-making. There is evidence that such strategies can be taught to all groups of students, including multicultural, at-risk, and special education children and that the effects ultimately involve empowerment, enhanced self-worth, increased motivation and engagement in school routines and values, and positive behavior change.[30,38,39,52-54] Further, in the absence of specific teaching, it appears as if children can develop poorly elaborated and biased strategies.

Social/health decision-making framework. The use of a social/health decision-making framework that is consistent between home and school and consistent over time is especially likely to facilitate parental engagement, especially as they come to value the application of the same decision-making principles their children are learning to issues in their own lives. This implicitly serves to solidify the validity of such frameworks as part of school instruction and as a goal of health education.

FIG TESPN. Figure 1 illustrates an example of a social/health decision making framework. An eight-step strategy is taught in elementary school through high school, with appropriate levels of sophistication and application to salient issues. In elementary and middle school, children learn about FIG TESPN, a loose mnemonic for the eight steps. Among the things children do to reinforce learning is to invent a FIG TESPN character, complete with history, and FIG is invoked to assist children with a wide range of social and health decisions. Children show excellent retention of the FIG concept, and continuity and coordination are enhanced because adults in the child's environment know how to elicit thoughtful decision making from children.

Several significant aspects of this particular model include its integration of affect into all phases of decision making, its emphasis on prior analysis of potential obstacles ("make a final check"), its focus on detailed planning, and its "try and re-think" phase, which explicitly assists in integrating behavior with cognitive and affective processes in the service of improved future decision-making. This also is a relatively unique emphasis of self-control and group participation and social awareness skills for young children and multicultural and special needs groups prior to extensive instruction in decision-making. These skills prepare children to address learning and psychosocial problems which often lead them to have distortions in social perception and social information processing and impairments in self-regulation, affective awareness, and sequential decision-making.[51,55,56]

Positive socialization environments for health. An emphasis on role modeling is important but must not be carried too far because it may alienate parents and others who will not or cannot be "perfect" models; the key is to create positive socialization environments for health and to see there is at least one salient figure in a child's life who serves as a positive model and source of support around health-related behaviors.

Figure 1

Steps for Social/Health Decision Making

1) *FEELINGS are your cue to problem solve*
2) *IDENTIFY the issue*
3) *GUIDE yourself with a goal*
4) *THINK of as many possible things to do*
5) *ENVISION end results for each option*
6) *SELECT your best solution*
7) *PLAN the procedure and anticipate roadblocks*
8) *NOTICE what happens and remember it for next time*

Respectful, caring engagement. Formal and informal instruction should be characterized by processes identified by Gilligan[26] as constructive engagement, by Damon[57] as respectful engagement, by Clabby and Elias[56] as Keeping the Channels Open, and by Shure and Spivack[58] as dialoguing. These processes include active, respectful listening, open-ended questioning which stimulates representational thinking and reflection about affect and behavior, reciprocal sharing, a climate of acceptance, and a commitment to fostering the self-regulation of children. Such processes are most likely to occur in the context of a relationship with a stable, caring, prosocially oriented adult.

Adult-guided and peer-mediated learning. Development of higher-order thinking skills requires careful and continuous mediation by teachers and other adults;[59] there also is a developmental progression such that active guidance and monitoring and feedback are of particular importance during the elementary years. Once a solid foundation is built, an emphasis on peer-mediated instruction in the middle school years will yield considerable benefits; in high school, a balance between adult-guided and peer-mediated learning seems best. Both instructional modalities can extend and deepen learning through extended projects that require individual and group work and which engage higher-order planner skills and integrate various health areas such as biology, nutrition, and cardiovascular functioning. These projects are further enhanced if they reach out beyond the classroom and include service components.

Salient learning modalities. Instruction must incorporate salient sources of health-related learning for different age and cultural groups. Of particular future emphasis will be entertainment and computer-based media. For example, one can envision a Sesame Street or Mr. Rogers health compilation, a similar effort based in MTV, and animation of FIG TESPN.

Best practices. "Best instructional practices" have been summarized as learner-centered, field-based, action-oriented, and discovery-focused.[41] Other recommended practices include use of metacognitive strategies, graphic organizers, matching teaching and learner styles, and well-functioning classroom management systems[39,53,60] and share the general "state of practice" principles outlined earlier.

Affective instruction. Instruction in affect need not have explicit emphasis. Self-control and group participation and social awareness skills can be taught in the preschool and beginning elementary school years[51] and children should have a general awareness of expected changes in their emotional functioning as they enter new developmental periods or encounter stressful life circumstances. [28]

CRITICAL ISSUES IN IMPLEMENTATION

What can be done to enhance and preserve the elements of change most relevant to the perspective on curriculum and instruction?

Beware of vocabulary. The vocabulary of change is important. Metaphors are needed that capture and maintain enduring, broad public attention, such as the "Race to the Moon." Terms like "comprehensive" can be frightening; "comprehensive school health education" may not engage the average citizen, legislator, or school board member.

Respect history. In any change movement, recognition must be given to the work that already has occurred, in which many people may have substantial investment and commitment. While this may appear to place a limit on change, it is essential the motivation that led to these positive developments be transferred to the upcoming efforts.

Prepare seriously. A long-term perspective on staff development must become a priority, with a possible primary focus on administrators and supervisors of curriculum and instruction. Such a focus creates a greater possibility for institutional and building based leadership.

Preservice training requirements also should require linkages with colleges and universities that train teachers, health educators, and educational administrators. For persons at the superintendent level, training should be provided in outreach, community, agency, and service liaison, and public education.

Encompass diversity. Training of teachers, curricular and instructional supervisors, and administrators will have to include greater emphasis on diversification of teaching styles to match the increasing diversity of learner styles in the population. This is necessitated by the increasing presence of cultural and ethnic groups which differ from "traditional" learners and the normative groups from which "standard" learning and teaching practices were derived.

Share turf. Current and projected shortages of qualified health educators suggest the necessity of alternate uses of the scarce and valuable resource that qualified health educators seem to be. Comprehensive change will require linkage of curriculum and instruction with school health services and other levels of services, perhaps through a mechanism like a brokerage model. It also is recommended that changes be sustained through a nationwide network of qualified health education coordinators to share "local solutions" to what are no doubt recurring problems and issues, as well as learnings relevant to responding to a diverse, multicultural learner and parent population. Such a network is potentially fundable by state legislatures out of education and health funds.

Exercise patience. Teaching health raises issues related to presenting material about sexuality and having to delve into topic areas that are unavoidably personal. Any resistance encountered may be related to educators' and parents' beliefs about the relative importance of health to other subject areas and the reality of its linkage to children's future well-being. Resolving these issues may take years of community dialoguing and negotiation.[61]

CONCLUSION

Comprehensive school health education, especially as outlined by the National Professional School Health Organizations,[17] is a core element of public health and education goals. However, this is not a new realization. In contrast to previous attempts, current efforts to promote school health education must be continuous, vigorous, and broad-based. The convening of the National Commission on the Role of the School and Community in Improving Adolescent Health is a necessary and promising new beginning, but it must serve as a catalyst, organizing force, and rallying point, a sort of NASA for school health education, and not simply as a policy panel.

As noted, the curriculum and instruction component of a comprehensive program, as well as other components, should reflect the functional dissociability of affect, cognition, and the contexts and history of social relationships within which both develop and operate. Methods that enhance each facet of this interrelationship were suggested, with particular attention to applications to the increasing cultural diversity of the learner population and the necessity of proactively engaging special needs and "at-risk" children in the school health education process.

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CHID Database Search

The CHID (Combined Health Information Database) is produced by the U.S. Centers for Disease Control.

1

TI Adolescent Pregnancy-Prevention Program. A Model for Research and Evaluation.

AU Zabin, L.S.; Hirsch, M.B.; Smith, E.A.; Streett, R.; Hardy, J.B.

SO Journal of Adolescent Health Care. 7(2):77-87, March 1986.

AB Despite the increased interest in the effects of adolescent pregnancy prevention programs, most interventions lack the research design and data essential for evaluation. A model is described in which evaluative research was incorporated into program design. The derivation of the model, the selection of measurable parameters, characteristics of the population reflected in baseline and subsequent data, and problems in quantifying and interpreting appropriate variables are discussed. Clinical data and aggregated data from three self-administered surveys are used. The surveys were completed by students in the inner-city junior and senior high schools that cooperated in the education and clinical program. The manner in which these two types of data augment one another in assessing program effects is described. The study explores the evaluation and the timing of change in sexual knowledge, attitudes, and behavior (coital, contraceptive, and clinic), and thus may contribute to the design of measurable, replicable interventions.

2

TI Adolescent Pregnancy Prevention by Health Education Computer Games: Computer-Assisted Instruction of Knowledge and Attitudes.

AU Paperny, D.M. Starn, J.R.

SO Pediatrics. 83(5):742-752, May 1989.

AB The authors evaluated the use of computer-assisted instruction to influence teenagers to respond negatively to pregnancy and to improve sex education for adolescents. With social learning theory as a framework, they developed two computer games to help teenagers receive and retain knowledge and to develop attitudes that favored delayed parenthood. The purpose of "The Baby Game" is to generate a desire to delay parenthood by realistic simulations that allow teenagers to evaluate their readiness for parenthood. Students learn (1) assessment of their own readiness to parent, (2) the amount of time needed for child rearing, (3) the costs of childbirth and child rearing, and (4) a more realistic understanding of the scope and responsibility of other demands of parenthood. The purpose of the second game, "Romance," is to improve knowledge about sexuality and contraception and to simulate the practice of responsible decision making. "Romance" includes (1) practice in communication skills, (2) description of the benefits of abstinence through demonstration of the actual risks of sexual activity, (3) simulated outcomes and information about contraception and sexuality, and (4) responsible decision making based on accurate knowledge and behavioral practice with improved self esteem. Each of two experimental secondary school groups in Oahu, Hawaii, played one of the games while two control groups received a general health class in place of the games. The 718 students represented a cross section of the ethnic groups of Hawaii. Pretest and posttest evaluations determined changes in student knowledge and attitudes. Both games were associated with statistically significant increases in student knowledge about child rearing and sexual activity and in attitude changes in the desired direction. Both teachers and students found the games acceptable and entertaining. Additional testing in pediatric offices indicated that the games were also well received in a clinic setting and that medical staff were able to reduce counseling time. The games appeared to be effective in bringing about changes in knowledge and attitudes in this short-term study. Results suggest that automated health education can be a useful and cost-effective intervention for adolescents.

3

TI Adolescents, Sex, and Education.

AU Hofmann, A.D.

SO New York University Education Quarterly. 8(4):7-14, Summer 1977.

AB Changes in American adolescent sexual behavior indicate the need to reformulate sex education to ensure that it helps young people make proper sexual decisions. A 1970 representative survey of 4,000 girls, aged 15 to 19 years, showed that 27 percent of the white girls admitted to having coitus by 17 years of age; by 19 years of age, 46 percent were sexually experienced. Another 1970 survey of 1,000 male and 1,000 female adolescents living in a small middle-class community indicated that 27 percent of the male and 16 percent of the female respondents affirmed that they were sexually experienced; these figures rose to 33 percent and 22 percent, respectively, by 1973. An ethos of personal freedom and a need to "grow up differently than one's parents" have reinforced recent increases in sexual activity among teenagers. Furthermore, the economic roots of cultural bans on premarital intercourse have become superannuated, and recent legislation and judicial decisions have affirmed the rights of minors to freedom of expression, to privacy, and to access to medical care, including contraceptive services. These factors, coupled with the adolescent's need to develop a sexual identity, indicate the need for sex educators to incorporate the developmental aspects of adolescence into their courses, to create open educational forums directed by the adolescents, and to offer support for each adolescent's best decision.

4

TI The Alteration of Adolescent DUI: A Macro Level Approach.

AU Wodarski, J.S. Fisher, A.P.

SO Alcoholism Treatment Quarterly. 3(2):153-162, 1986.

AB This article reviews statistics concerning teenage alcohol abuse and its effect on driving and suggests strategies for promoting macro-level change in societal norms and values regarding driving while under the influence (DUI). Many forces promote alcohol consumption and drunk driving among teenagers. People of all ages are dying at an alarming rate on the highways, and at the same time society is accepting and condoning drinking and driving among teens and others. Macrosystem changes are called for to reorient society to the dangers of its complacency. The authors describe educational approaches within: (1) school and peer group environments, which provide knowledge and awareness coupled with a responsible decision approach to coping skills—two innovative programs with documented success are the Sunrise Program in Pasadena, California and the Alcohol Education by Teams-Games-Tournaments approach; (2) the home and family, where parents must be positive role models and can be supported in this through parent effectiveness training; (3) the media, which exerts a strong influence on youth and can portray both positive and negative drinking behaviors; (4) community movements, which can provide alternatives to irresponsible community norms; (5) laws and enforcement; and (6) businesses and industry, where sponsorship of advertisements and radio and television public service announcements promote responsible drinking. These societal forces must work together to eradicate DUI.

5

TI Changing Community Health Behaviors: A Model for Program Development and Management.

AU Hargreaves, M.R.K. Laitakari, J.K. Huff, F. Rautaharju, P.M.

SO Health Values. 10(6):34-43, November/December 1986.

AB A model has been proposed to improve program development and management of behavior change programs with large-scale community impact. It can be applied to epidemiologic problems in which lifestyle is an important component, such as heart disease, adolescent pregnancy, hypertension, weight control, and cancer control and prevention programs. The model combines two previously existing models: one that states that program development is an ongoing cyclical process that starts with uncertainty yet can progress to institutionalization with suitable testing, and the second that states that program management within each developmental cycle progresses through specific phases that can be hampered by plateaus and setbacks. The combined model enables the program process phases (modeling, community planning, implementation, and evaluation) to be applied in an increasingly effective manner through sequential program development cycles (pilot, experimental, demonstration, and institutionalization).

6

TI A Cognitive-Behavioral Approach to Substance Abuse Prevention.

AU Botvin, G.J. Baker, E. Renick, N.L. Filazzola, A.D. Botvin, E.M.

SO Addictive Behaviors. 9:137-147, 1984.

AB The authors examined the effectiveness of a cognitive-behavioral approach to substance abuse prevention among 1,311 seventh-grade students in 10 suburban New York junior high schools. The study also compared the relative effectiveness of using older peers or classroom teachers to implement the program. The intervention strategy was a multicomponent curriculum focusing on the major social, psychological, cognitive, and attitudinal factors that promote the use of alcohol, tobacco, and marijuana. There were five major components in this 20-session curriculum: (1) cognitive, providing information; (2) decision making; (3) coping with anxiety; (4) social skills training, including assertiveness techniques for refusal; and (5) self improvement. In one experimental condition, high school students with 4 hours of education as peer leaders and additional briefing sessions implemented the program. In the other condition, classroom teachers who attended a training workshop delivered the curriculum. Self-report measures indicated student use of alcohol, cigarettes, and marijuana after program completion. The prevention program had a measurable effect on the use of all three types of substances, but only when implemented by older student peer leaders. Effectiveness was also apparent on cognitive, attitudinal, and personality variables, as well as on behavioral outcomes.

7

TI The Concept of Health Promotion and the Prevention of Adolescent Drug Abuse.

AU Perry, C.L.; Jessor, R.

SO Health Education Quarterly. 12(2):169-184, Summer 1985.

AB A three-dimensional conceptual model for health promotion interventions to prevent adolescent drug abuse is elaborated. The model is based on an analysis of the concept of health into four domains: (1) physical, (2) psychological, (3) social, and (4) personal. According to the model, intervention approaches to change behavior can be divided into two major strategies: (1) introducing or strengthening health-enhancing behavior, and (2) weakening or eliminating health-compromising behavior. The foci of interventions can be divided into three levels: (1) environment, (2) personality, and (3) behavior. Components of the health promotion program, the Minnesota Heart Health Program, are designed to prevent adolescent drug abuse. These include health behavior campaigns, educational interventions, and community organization. The theoretical content of the components is shown to be linked logically to the health promotion model.

8

TI Effects of Contraceptive Education on Adolescent Male Contraceptive Behavior and Attitudes.

AU Taylor, M.E. Wang, M.Q. Jack, L., Jr. Adame, D.D.

SO Health Education. 20(2):12-17, April-May 1989.

AB This study investigated the relationship between contraceptive education and teenage male contraceptive behavior and attitudes in Pennsylvania. Specific research questions were (1) What are the attitudes and behavior about contraceptives of teenage males in Pennsylvania? (2) Are there differences between those who had contraceptive education and those who did not? and (3) Are there differences in attitudes between these groups? The final sample consisted of 801 adolescent males in grades 9 through 12 in six schools in central and northeast Pennsylvania. A questionnaire was used to determine the extent and depth of contraceptive education in the schools and to ask students about their attitudes and behavior. Of the 801 subjects, 92 percent had received some sex education and 88 percent had some contraceptive education in high school. The majority of the 71 percent who had intercourse at least once (a 62 percent majority) had not discussed contraception with their partners and 59 percent had not used contraception or had used an ineffective method. There was no significant relationship between use of contraceptives and the extent or depth of contraceptive education. Only two of the schools had covered sexuality in an in-depth course. All six teachers of the programs believed that teen pregnancy was a problem, but only one school had guidelines for dealing with the problem, and no school had a formal contraceptive education program. Health educators need to define whether their intention is to affect the contraceptive behavior and attitudes of students. If they demonstrate that well-designed, data-based, and effective contraceptive education can impact on adolescent behavior, more support may be forthcoming.

9

TI Effects of a Preventive Alcohol Education Program After Three Years.

AU Duryea, E.J. Okwumabua, J.O.

SO Journal of Drug Education. 18(1):23-31, 1988.

AB One hundred and thirty students at a Nebraska high school participated in a 3-year study investigating the long-term influence of a preventive alcohol education intervention based on W. McGuire's (1961) attitude inoculation model. The intervention was designed to provide 9th-grade students with knowledge and behavioral resistance skills to help them resist pressures to engage in risky alcohol-related behaviors. At baseline (during 9th grade), students were highly susceptible to peer pressure to misuse alcohol. An anonymous, self-report questionnaire was used to assess selected behaviors—frequency of riding with drinking drivers, drinking, and excessive drinking—and two cognitive items regarding tolerance to alcohol. At 6 months postintervention, program participants reported statistically significant improvements in some alcohol-related behaviors. Students' self-report data at 3-year followup revealed no significant differences for cognitive items nor for risky alcohol-related behaviors between program participants and controls. However, mean levels for frequency of risky alcohol-related behaviors were low, especially when compared with the school's history of alcohol-related problems. Discussion of these findings focuses on the possible influence of developmental factors on program impact over time and on the need for followup activities to maintain students' resistance to persuasion to engage in risky health behaviors.

10

TI Empowerment Education: Freire's Ideas Adapted to Health Education.

AU Wallerstein, N. Bernstein, E.

SO Health Education Quarterly. 15(4):379-394, Winter 1988.

AB The authors discuss empowerment education as an effective health education and prevention model to promote personal and social change. Empowerment is defined by Brazilian educator Paulo Freire as a social action process that promotes the participation of individuals, organizations, and communities in gaining control over their lives as a strategy for health. Freire's three-stage methodology includes (1) listening to understand the felt needs of the community, (2) participatory dialogue using a problem-posing methodology, and (3) action or positive changes that people envision during the dialogue. The authors present a case study of an empowering education substance abuse prevention program. The Alcohol and Substance Abuse Prevention (ASAP) Program of the University of New Mexico seeks to reduce excess morbidity and mortality among multiethnic middle and high school students. Operating since 1982, the program attempts to empower youth from high-risk populations to make healthier choices in their own lives, to play active political and social roles in their communities, and to effect positive changes. ASAP brings students from high-risk communities for visits to the emergency and detention centers to interact with those who have alcohol and drug-related problems. They participate in a curriculum that incorporates social learning and resistance to peer pressure; life skills competencies and decision making; peer education strategies; and analysis of media and policies that influence consumption. After four sessions, students receive additional training to become peer educators. The Freirian perspective distinguishes ASAP from other program models, incorporating the three-stage methodology of listening, dialog, and action. ASAP is now piloting community outreach programs on an Indian reservation. Evaluation of ASAP has indicated that program participation increases students' perceptions of the risks of alcohol and drugs. Direct impact on school and community has been harder to evaluate, since empowerment is a long-term process that must work with the resources of a community. The ASAP model incorporates Freire's belief in personal and social transformation with persons who experience social inequalities, cultural conflict, and lack of control. For health educators, these ideas offer guidelines to working with communities from different cultures, and how ideas can reach beyond the classroom into the community. The dual focus of empowerment education on participatory reflection and action can enhance changes in personal growth, social support, community organizing, policy and environmental changes, and other indicators of increased control over one's life.

11

TI Evaluating a Nutrition Education Program for Pregnant Teen-Agers: Cognitive Vs. Behavioral Outcomes.

AU Perkin, J.

SO Journal of School Health. 53(7):420-422, September 1983.

AB Evaluation of nutrition education programs must address both cognitive and behavioral changes. A manual on nutrient needs during pregnancy and lactation was developed for use in classes for pregnant teenagers. Effectiveness of the program was evaluated using both cognitive and behavioral change measures. A pretest and a posttest were administered to assess cognitive learning. Three-day diet records were obtained for all 11 subjects before and after instruction. The between-tests difference in knowledge was significant. However, actual dietary improvements were slight. Results demonstrate the need to assess behavior for full evaluation of educational effectiveness. The need for environmental support for the translation of classroom knowledge into appropriate behavior is emphasized.

12

TI Factors Affecting Adolescent Contraception Practices: Implications for Sex Education.

AU Dembo, M.H.; Lundell, B.

SO Adolescence. 14(56):657-664, Winter 1979.

AB A review of studies regarding limited contraception practices among adolescents indicates a lack of information among adolescents but also suggests that more or improved information, by itself, may not change behavior. Research suggests that information, cognitive-emotional development, and sexual identity are interrelated in adolescent decisions regarding use of contraceptives. Because most of the studies reviewed were ex post facto, it was difficult to analyze how the variables interacted. However, the data suggest that many youth are not emotionally or cognitively prepared to accept their sexuality to a degree that allows sexual activity planning and are unable to make immediate sexual decisions. Because sex-related decisions are being made at an increasingly younger age, a decrease in future unplanned pregnancies is unlikely without more effective educational interventions. Implications for sex education programs are discussed.

13

TI The Impact of the "I'm Special" Program on Student Substance Abuse and Other Related Student Problem Behavior.

AU Kim, S. McLeod, J. Palmgren, C.L.

SO Journal of Drug Education. 19(1):83-95, 1989.

AB The authors describe the evaluation of the I'm Special Program (ISP) a fourth-grade substance abuse prevention program implemented in the schools of Mecklenburg County, North Carolina. The program has nine 45- to 50-minute sessions, and is taught once a week for 9 weeks. Teachers receive 20 hours of inservice training. The first eight sessions are directed at self worth, healthy living skills, and group skills. The final session allows the students to apply these skills through role playing. The evaluation study used a quasi-experimental design to compare students who were exposed to the ISP with students who did not receive the curriculum during their later school years in grades 5 through 12. Overall, the proportion of students using illegal drugs and the incidence of drug-related problem behavior were lower among those exposed to the ISP than among nonrecipients, particularly among those in grades five through seven. The impact of the program seemed to diminish significantly in and after grade nine, and during senior high school the pattern of use was almost random. The authors suggest that students may need to have a booster program during grades six and seven and again in high school. More important might be a comprehensive program for all grade levels. In spite of study weaknesses, ISP did demonstrate a positive behavioral effect from the educational intervention.

14

TI Influencing Adolescent Life Style: The Role of Mass Media.

AU Skirrow, J.

SO Drug and Alcohol Dependence (Lausanne). 20(1):21-26, 1987.

AB The Alberta Alcohol and Drug Abuse Commission has been conducting a primary prevention program since 1981 intended to alter the development of substance use patterns in adolescents aged 12 to 17 years. Unlike many substance abuse programs, the program is not substance specific, although alcohol, tobacco and other substances are used to illustrate specific points. The program integrates mass communications, personal face-to-face program instruction, and community action. One unique approach is the production of a glossy magazine, Zoot Capri, that includes articles that provide information about drugs and alcohol and is mailed to adolescents at their homes. The program has also concentrated on promoting skill development in social situations and uses materials with the theme, "life's bleak moments don't last forever" to show how the inappropriate use of alcohol to survive failure causes one to avoid meaningful learning. By introducing broad concepts and conveying basic, general information, the mass media aid in establishing an atmosphere of acceptance of critical issues. Measurable changes in attitudinal and behavioral measures have occurred. While the mass media alone cannot alter behavior, they can reinforce essential arguments and legitimize the community-based, face-to-face program elements that may be able to achieve meaningful, lasting behavior change.

15

TI Longitudinal Effects of the Midwestern Prevention Project on Regular and Experimental Smoking in Adolescents.

AU Pentz, M.A. MacKinnon, D.P. Dwyer, J.H. Wang, E.Y.I. Hansen, W.B. Flay, B.R. Johnson, C.A.

SO Preventive Medicine. 18(2):304-321, March 1989.

AB The Midwestern Prevention Project (MPP) is a longitudinal school- and community-based trial for prevention of drug use in adolescents, with emphasis on the three commonly used substances: Tobacco, alcohol, and marijuana. The authors compared the effects of the MPP on a cohort of students beginning in grades six and seven, using different schools as units of analysis, with the junior high or middle school as the school of origin and the high school as the endpoint of intervention. They demographically matched 50 schools in 15 districts and assigned each to either to MPP or to health education as usual as a control group. This study focuses on the effects of the intervention on smoking 2 years after the implementation of the program in the Kansas City Standard Metropolitan Area, where the local name is Project Students Taught Awareness and Resistance (Project STAR). During a 6-year period, MMP will expand to include school programs, a parent organization program, community organization, health policy change promotion, and mass media programming. The first four components will be introduced at the rate of one a year, while mass media programming will occur in all years. The program is based on social learning theory and theories of behavior change. Smoking effects were determined via a student self-report survey, with confirmation through the biochemical measurement of expired air for some students. An average of 4,664 students entered the program each year. Results of the MPP from baseline through the first 2 years appear to be significantly reducing both experimental and regular smoking in adolescents. Analysis with the school as the endpoint, however, indicated slightly weaker program effects, determined by comparison with controls, at the 2-year followup, the year in which 64 percent of the students had moved to a junior high or high school. This finding suggests that the school environment may moderate the effects of a smoking prevention program. It is possible that the transition itself, rather than the environment of the new school, resulted in the decrease in the size of program effects.

16

TI Pregnancy-Prevention Groups for Adolescents.

AU Blythe, B.J.; Gilchrist, L.D.; Schinke, S.P.

SO Social Work. 26(6):503-504, November 1981.

AB A study conducted in a public high school was undertaken to determine whether decisionmaking and interpersonal skills regarding sexuality could be taught via group training sessions. The subjects, 12 females and 7 males, 14 to 18 years of age, were randomly assigned to either a group that received information on human sexuality and training in decisionmaking and interpersonal skills or a control group that received no instruction. The experimental 14-week training was led by a male-female team of graduate social work students; two 1-hour sessions were held each week. Included were didactic presentations, group discussions, experiential exercises, modeling, roleplaying, coaching, feedback, and social reinforcement. A written quiz at the beginning of each session assessed participants' understanding, and homework assignments helped to transfer new knowledge and skills to situations outside the group context. Data from pre- and post-treatment tests showed that, as compared with subjects in the control group, subjects in the experimental group were more knowledgeable about matters concerning sexuality and pregnancy prevention, scored significantly better on tasks essential for effective decisionmaking, and performed better on videotaped roleplays. Administration of evaluation forms and followup instruments 3 and 6 months after the conclusion of the program indicated that the program was popular and effective in encouraging use of contraceptives.

17

TI Preventing Adolescent Pregnancy: Counseling Teens and Their Parents.

AU Hardy, J.B.

SO Medical Aspects of Human Sexuality. 21(7):32-46, July 1987.

AB The author describes an effective school-based adolescent pregnancy prevention program, and suggests ways in which physicians, especially family practitioners, can adapt the methods used in this program for their own practices. The Baltimore Pregnancy Prevention Program had three major components: (1) in-school sex education and counseling for students in grades 7-12, (2) a clinic housed in a "store-front" near the two participating schools, and (3) research and evaluation. The major thrust of the educational program was to encourage personal responsibility and goal setting, so that students would postpone sexual activity until they were older and more mature. The program emphasized abstinence as the most effective means of prevention, but also provided information on contraception. Students at two intervention schools and two comparison schools completed questionnaires before and after the 3-year program. Students attending the program schools demonstrated significant improvements in knowledge, age at first intercourse, use of contraception, and pregnancy rate.

18

TI Preventing Drug Abuse in the United States: Integrating the Efforts of Schools, Communities, and Science.

AU Kolbe, L.J.

SO Journal of School Health. 56(9):357, November 1986.

AB Prevention of drug abuse in the United States requires an integrated effort of schools, communities, and research facilities. The past decade has produced a substantial body of scientific research about the effectiveness of community-based approaches to influencing health behaviors. Such community-based approaches typically combine interventions to enable families, peers, schools, media, and other relevant agencies within a given community to address simultaneously a behavior that influences health. Appreciating the evidence that community-based approaches can improve the health of people throughout the United States, the Henry J. Kaiser Family Foundation launched a $15 million national health promotion program in 1985. The foundation invited proposals for community-based projects, and convened a panel of experts in community-based health promotion programs to consider the capacity of such programs to reduce drug abuse behaviors among school populations.

19

TI Prevention of Alcohol Misuse Through the Development of Personal and Social Competence: A Pilot Study.

AU Botvin, G.J. Baker, E. Botvin, E. Filazzola, A.D. Millman, R.B.

SO Journal of Studies on Alcohol. 45(6):550-552, November 1984.

AB The authors examined the impact of a psychosocial alcohol-misuse prevention effort among 239 seventh graders at two New York City schools. The schools were comparable with regard to baseline drinking prevalence; about 10 percent of students reported drinking alcohol at least monthly. Students at the experimental school participated in a 20-session prevention program designed to facilitate the development of basic personal and social skills. The curriculum contained (1) a cognitive component presenting information on the consequences of alcohol use and its prevalence among teenagers; (2) a decision-making component; (3) techniques for coping with anxiety; (4) a social skills training component, including the application of assertiveness techniques to resist pressures to drink; and (5) a self-improvement component to give students experience in changing their own behavior. Two science teachers received a 1-day orientation before implementing the program. Pretest, posttest, and 6-month followup data from 167 students indicated that 54 percent of students in the experimental group reported less frequent drinking, 73 percent, less drinking per occasion, and 79 percent, less frequent episodes of drunkenness than students in the control group. The strategies previously found effective in smoking prevention programs appeared effective in this alcohol abuse prevention program.

20

TI Promoting Health Among School Age Children.

AU Trichopoulos, D. Petridou, E.

SO Scandinavian Journal of Social Medicine (Stockholm). 16(4):251-255, 1988.

AB The authors discuss the importance of health education in the context of health promotion and the reasons for directing efforts at school-age children. Health education now focuses on changing behavior more than it concentrates on the acquisition of knowledge, even though correct knowledge is usually a precursor of behavior change. There is a consensus among health professionals that improvements in European health in recent years are primarily due to preventive public health measures focusing mainly on the macroenvironment. As medical technology appears to reach some limitations, it is apparent that education is the key to prevention. A major reason for focusing on youth is the biomedical evidence of the effectiveness of early interventions for cancer and coronary heart disease. Arguments drawn from descriptive epidemiology also confirm the efficacy of working with young populations particularly susceptible to certain health risks (e.g., sexually transmitted disease, drug and alcohol abuse, unwanted pregnancies). It is also recognized that the critical aspects of behavior that lead to health risks are rooted in the school-age years. Other justification for intervention with the young is found in the influence young people have on present and future society. A comprehensive school health program should motivate health maintenance and promote well-being, rather than simply focusing on the prevention of disease. Making health education part of a general educational program helps ensure that health is viewed as both a right and a duty.

21

TI Sex Education: How Should It Be Offered (Editorial).

AU Marks, J.S.; Cates, W.

SO Journal of the American Medical Association. 255(1):85-86, January 3, 1986.

AB To be effective in controlling unplanned pregnancy and sexually transmitted disease (STD) among adolescents, sex education programs must include behaviorally oriented skills development and service provision as part of their curricula. In the area of teen pregnancy, several programs have been shown to be effective in reducing pregnancy. These programs have emphasized a strong counseling component as well as linkages with contraceptive service delivery programs. In the areas of STD, recent curricula have been developed to encourage behavior that prevents problems and to provide information on what to do if a teenager develops STD. Additional studies are needed to demonstrate convincingly that well-designed sex education programs aimed at providing adolescents with both biomedical knowledge and behavioral skills necessary to make informed decisions regarding their health will actually lead to substantial reductions in unhealthy behaviors. Furthermore, whether changed behaviors will lead to reduction in outcomes must be assessed. To achieve the 1990 Health Objectives for the Nation with regard to unintended teenage pregnancy and STD, the number of teenagers with access to comprehensive sex education programs must continue to increase. Now that effective programs are possible, finding ways to have these programs fit community standards and be responsive to community concerns remains the primary challenge.

22

TI Sex Education in High School.

AU Finkel, M.L.; Finkel, S.

SO Society. 23(1):48-52, November-December 1985.

AB The rationale behind formal instruction in sex education is that increased knowledge about human reproduction, sexual behavior, and contraception could dispel misconceptions, and encourage more informed, responsible decision making about sexual activity and interpersonal relationships. The New York City Board of Education revised its family living and sex education curriculum in 1981 and 1982. Evaluation of the revised curriculum provided an opportunity to assess how relevant the course of instruction was and to see what were the strengths and weaknesses of the curriculum. The study focused on the impact the new curriculum had on students' knowledge, attitudes, and behavior. Teacher reaction to the course was also assessed. A random selection was made of four high schools in the Bronx, New York. Both student and teacher responses indicated that the revised curriculum was successful in increasing knowledge and somewhat successful in improving attitudes. A major drawback to this eleventh-grade course is that most of the students have had sexual intercourse by the time they reach eleventh grade.

23

TI Six-Month Follow-up Results of a Preventive Alcohol Education Intervention.

AU Duryea, E.; Mohr, P.; Newman, I.M.; Martin, G.L.; Egwaoje, E.

SO Journal of Drug Education. 14(2):97-104, 1984.

AB A high school (9th grade) alcohol education program was designed to (1) increase students' knowledge of alcohol's effects upon performance, (2) strengthen their ability to refute selected persuasive prodrinking and driving arguments, and (3) decrease the likelihood of their complying with pressure to participate in risky alcohol-related situations. Films, slides, discussion, and role playing activities were included and it was presented to 155 ninth grade students in Nebraska. The dependent variable was scores on written tests administered before, immediately after, and 6-months after the program. Analysis of variance of posttests indicated that the experimental group scored significantly better on knowledge, refuting arguments, compliance, and riding with drinking drivers. A repeated measured analysis of variance, using the scores of students who completed the followup questionnaire, showed that the knowledge, refutation, and compliance scores of the experimental group continued to be significantly better 6 months later.

24

TI Student Compliance in Risky Alcohol Situations.

AU Duryea, E.

SO Journal of Alcohol and Drug Education. 30(2):44-50, Winter 1985.

AB One hundred and fifty-five ninth-grade students participated in a study investigating student tendency to comply with peers in a variety of risky alcohol and driving situations. The experimental groups took part in a 1-week preventive alcohol education program that consisted of films, question-and-answer periods, role playing, and slide shows. Subjects were then asked to read four alcohol and driving vignettes and report what their intended level of compliance would be in each situation. Results of the study found that a combination of educational techniques are effective in eliciting a reduced level of intended compliance in risky health situations. A 6-month followup of the students demonstrated significantly lower levels of intended compliance. The results would suggest that the tendency to comply with peers in dangerous alcohol and driving situations is malleable. Health practices may be improved if the adolescent can be taught not to be a passive listener and not to feel pressure to comply in potentially risky situations.

25

TI Substance Abuse Prevention Programs: The State of the Art in School Health.

AU Vertinsky, P.

SO Health Promotion (Ottawa). 27(4):8-14, Spring 1989.

AB The author describes the state of the art of effective school health education, particularly in the area of substance abuse prevention. It is only recently that health educators have come to see that merely increasing knowledge about health problems is not enough. Finding ways of molding and changing both attitudes and behavior, however, will not be effective unless there is a coherent rationale about the best way of life to pursue. Those who are involved in the education of young people about substance abuse need to understand that two influences—advertising and children's social networks (both in school and in the family)—are pivotal in promoting substance abuse. Significant others (family and peers) are extremely influential in children's decisions to take up smoking, drinking, or drugs. The School Health Education Evaluation, the largest study of school health education conducted in North America, demonstrate that school-based health education can do much to combat these influences. To be effective, a curriculum should be broad, well-planned, sequentially developed, and continuing throughout the school years. More than 50 classroom hours are necessary to produce appropriate effects in knowledge, attitudes, and behavior. The curriculum should be complemented by outreach activities to involve family and community members. Inservice programs for teachers, a school environment that reinforces health education objectives, and effective leadership are also necessary. Research indicates the importance of a comprehensive program beginning at an early age. A focus on social learning theory, concentration on the immediate and personal consequences of smoking, and provision of refusal skills to adolescents are components of programs with demonstrated success. In the final analysis, the impact of any program will depend on how it is implemented and maintained. Schools can increase students' predispositions to act in healthy ways, but community support is needed for real effectiveness.

26

TI The Theory and Practice of Behaviour Change in the School Context.

AU Emery, M.

SO International Journal of Health Education (Geneva). 23(2):116-125, 1980.

AB Teaching strategies to encourage responsible sexual behavior among members of a class of 14- to 15-year-old low-ability pupils are outlined, and means to help teachers use these strategies are discussed. Class topics, which are examined via discussion or role playing, include (1) the options of no premarital sex, premarital sex using contraception, and premarital sex without using contraception; and (2) considerations and consequences of abortion. Teaching considerations include (1) the need to clarify teaching objectives and investigate pupils' values and beliefs, particularly relative to consequences; (2) the role of pressures and constraints in the formation of health behaviors; (3) avoidance of negative pressures; (4) the use of fear and distractors to influence health decision making; and (5) the need for teachers to think in behavioral terms and not only in terms of imparting knowledge.

ERIC Database Search

The ERIC (Educational Resources Information Center) database is produced by the U.S. Department of Education.

1

AN EJ335386.

AU Elder, John P.; Stern, Robert A.

TI The ABCs of Adolescent Smoking Prevention: An Environment and Skills Model.

SO Health Education Quarterly; v13 n1 p181-91 Sum 1986. 86.

AV UMI.

AB Based on social skills and operant behavioral perspectives, an Environment and Skills Model of smoking acquisition and prevention is proposed. This model involves an integrated examination of the antecedents, behaviors, and consequences of smoking. The importance of the "consequence end" of this three-term contingency is discussed. (Author/CT).

2

AN ED257014.

AU Bry, Brenna H.; Conboy, Cathy.

TI Changes in Drug Use, School Performance, and Self-Environment Perceptions during Preventive Intervention.

NT 12p.; Paper presented at the Annual Convention of the American Psychological Association (92nd, Toronto, Ontario, Canada, August 24-28, 1984).

AB Research has suggested that didactic values and discussions, life skills training, social skills training, and family intervention can reduce heavy drug use. Because subjects display variability in patterns of behavior change, increased understanding of these individual differences could be beneficial to interventions. A preventive intervention program was established for families concerned about their adolescents' alcohol or drug use. Adolescents provided data on daily drug, alcohol, and cigarette use for an 18-month period, along with school report cards and periodic self-report inventories. The intervention consisted of (1) identifying undesirable events; (2) assessing antecedents and consequences through weekly meetings; (3) focusing on the complaints; (4) teaching the family problem-solving techniques; and (5) encouraging consistent contingencies and modeling desired behaviors. The first two adolescents in the program showed widely differing patterns in almost every index except outcome; they both showed improvement by the end of follow-up in the two targeted behaviors (school performance and drug use) and showed no change in the two control, non-targeted behaviors (alcohol and cigarette use). (A detailed analysis of the behavior change patterns of these two subjects and the concurrent changes in self-efficacy expectancies, outcome expectancies, and values that might account for their differences is provided in the text and accompanying figures.) (NRB).

3

AN ED245150.

AU Brown, Gwyn M.; Greenspan, Stephen.

TI Development and Evaluation of a Social Foresight Curriculum for At-Risk Youth.

NT 27p.; Paper presented at the Annual Conference of the New England Educational Research Organization (Rockport, ME, April 27-29, 1983). Based on a 1981 doctoral dissertation by Gwyn M. Brown, George Peabody College for Teachers. Funding for this study was provided by Father Flanagan's Boys' Home, Omaha, NE.

AB Traditionally, school-based approaches to remediating deficits in social competence have focused on building aspects of temperament and character. The Socially Adept Verbalizations of Youth (SAVY) Curriculum, consisting of a series of exercises and activities, preceded by brief introductory lessons, was designed to develop social judgment skills in socially incompetent youths by decreasing egocentrism and by heightening their perspective-taking skills. To collect preliminary validation data on the curriculum, 17 adolescent students with behavior problems, who were attending an alternative inner city high school, were exposed to the SAVY curriculum as a 2-week module emphasizing social foresight, i.e. anticipating the consequences to oneself of various interpersonal actions. A control group (N=15) participated in the regular mental health course without the SAVY curriculum. A teacher-rated, modified version of the Acting Out, Moodiness, and Learning (AML) checklist was used to assess effects of the curriculum on behavioral adjustment. An analysis of the results showed that the experimental group demonstrated significantly greater rated behavioral improvement than the control group. This finding suggests that social foresight training may be of potential benefit in school-based intervention programs aimed at adolescents with behavior problems. (Author/BL).

4
AN ED263499.
AU Eisen, Marvin; Zellman, Gail L.
TI Health Belief Model-Based Changes in Sexual Knowledge, Attitudes and Behavior.
NT 23p.; Paper presented as part of the symposium "A Health Belief Model Approach to Improving Adolescent Fertility Control" at the Annual Convention of the American Psychological Association (92nd, Toronto, Ontario, Canada, August 24-28, 1984). For related documents, see ED 256 970 and CG 018 639.
AB A Health Belief Model (HBM) based educational intervention intended to increase adolescents' fertility control through abstinence or effective contraceptive usage was implemented and evaluated by pre-intervention interviews with 203 adolescents and post-intervention interviews with 146 adolescents. Participants' sexuality-related knowledge and attitudes were assessed 1 to 7 days before the program, on the day immediately after the program, and 3 to 6 months after completion of the program. Evaluation instruments tapped the four major perceptual components of the HBM: susceptibility to pregnancy, seriousness of pregnancy, interpersonal benefits of contraceptive usage, and barriers to contraceptive usage. Comparisons of pre- and posttest data revealed that the HBM intervention produced modest, but statistically significant changes in the health belief perceptions of participants and produced substantial changes in sexuality and contraceptive knowledge. There were also modest, but statistically significant increases in reported contraceptive usage following the program. Most importantly from a HBM perspective, the findings demonstrated substantial relationships between some health beliefs, sexual knowledge, and subsequent contraceptive usage for those adolescents who were or became sexually active following the program. (NRB).

5
AN EJ356486.
AU Mills, Marlene Christine.
TI An Intervention Program for Adolescents with Behavior Problems.
SO Adolescence; v22 n85 p91-96 Spr 1987. 87.
AV UMI.
AB Conducted a psychologically-oriented intervention program in addition to a conventional curriculum for adolescents (N=9) with behavior problems. Adolescents completing the program manifested less disruptive classroom behavior, increased their classroom participation, and displayed a more positive attitude toward school following participation. Teachers benefited by revitalizing their attitudes toward troubled students and their profession. (Author/ABB).

6
AN ED270395.
AU Loesch-Griffin, Deborah; And Others.
IN Stanford Univ. Calif. CIQ82275.
TI Predicting Health Behavior Changes in Adolescents: A Tenth Grade Nutrition Curriculum.
NT 35p.; Paper presented at the Annual Meeting of the American Educational Research Association (70th, San Francisco, CA, April 16-20, 1986).
AB Two studies investigated the utility of a Cognitive-Behavior Change model in predicting adolescents' health behavior changes. The intervention specifically aimed at increasing students' knowledge of heart healthy habits, strengthening their beliefs, attitudes, and confidence regarding their ability to improve their health habits, and providing students with the skills to make the heart healthy decisions and behavior changes. Six hundred and sixty tenth-grade students in six high schools in communities covered by the Stanford Heart Disease Prevention Program's (SHDPP) Five City Project participated in the study. The socioeconomic status of the students in both studies ranged from low to upper middle class. Students were assigned to a treatment condition with the 5-6 session SHDPP intervention or a control (delayed treatment) condition. In both studies, students receiving the SHDPP intervention exhibited greater health improvements than did students in the control condition, as measured by pre-post self-report survey and behavioral observations. The most powerful predictors in changing adolescents' health behaviors were Behavioral Intentions, Knowledge, and Confidence components of the Cognitive-Behavior Change model. (Author/JD).

7
AN ED241475.
AU James, Gordon B.
TI Understanding Health Behaviors of Adolescence—Implications for the Schools.
NT 31p.; Table 2, appendix IB, will not reproduce because of small print;1983
AB Health behaviors of all students, including adolescents, have direct impact upon both personal well being and actualization of potential for maximum learning. This paper reviews examples of concrete health behaviors that both positively and nega-

tively influence the two factors, and summarizes present objectives for the nation in the health promotion/disease prevention area. The major concepts presented include the underlying principles and theories of health behavior. The paper concludes with recommendations and concerns for practical implementation of health programs in the schools. Appendices include: (1) Surgeon General's goals for 1990 and objectives for the nation that can be directly attained or influenced in important ways by schools; (2) a typology of health behaviors; (3) Bloom's taxonomy of health behaviors; (4) locus of control summaries; (5) Piaget's stages of cognitive development and Kohlberg's stages of moral development and relationships between Piaget and Kohlberg; (6) a health belief model; and (7) the PRECEDE model. (Author/JMK).

MEDLINE Database Search

The MEDLINE database is produced by the National Library of Medicine.

1

AN 85088178. 85000.

AU Godley-M-D. Lutzker-J-R. Lamazor-E-A. Martin-J-A.

IN Alcohol Programs, Mental Health Services of Franklin & Williamson County, Inc., Marion, Illinois.

TI Advances in behavioral approaches to adolescent health care.

SO Prog-Behav-Modif. 1984. 18. P 227-65. (Review).

LG EN.

AB Behavior change professionals have developed treatment programs for a wide variety of health care problems affecting adolescents. Although a substantial data base of experimentally tested techniques exists for obesity, smoking prevention, and dysmenorrhea, much work remains in other areas. For example, the case studies reported on neurodermatitis and the survey work in teenage alcohol abuse must give way to systematic interventions employing group experimental designs. In addition, behavioral procedures should be compared to other treatments. Also, component analysis should be performed when multiple treatment strategies are used. Finally, strategies aimed at increasing the generalization of treatment, such as from classrooms to different community settings in substance abuse prevention programs and maintenance of treatment effects over long follow-up periods, are necessary. Only in this way will the efficacy of behavioral interventions for specific health problems be established. The leading causes of mortality among adolescents are due to accidents. Of the total number of deaths due to accidents, approximately 50% are attributed to motor vehicle accidents (National Safety Council, 1977). Many of these accidents are due to negligence, substance abuse, and, in general, immature behavior (Bakwin & Bakwin, 1972). In spite of a slow but consistent trend toward lower accidental deaths over time (National Safety Council, 1977), there still is a need for interventions designed to decrease risk-taking behavior, substance abuse, and carelessness in adolescents. Again, behavior change professionals might follow the example set by researchers who have begun to develop successful strategies for decreasing onset of cigarette smoking. These interventions and research methods, designed for use in schools, may provide a promising approach for addressing other kinds of prevention problems. It also seems appropriate to categorize cigarette smoking not only as a risk factor in the development of cardiovascular disease (Kuller, 1976), but also as a member of the risk-taking behaviors. Thus, procedures used to prevent cigarette smoking might also be adapted to prevent other kinds of risk-taking behaviors among adolescents. The work of McAlister et al. (1980), in preventing alcohol abuse as well as cigarette smoking by use of the same or similar procedures, is a case in point. Use of a procedure designed to train competency in refusing peer pressure has clear implications for reducing other risk-taking behaviors, such as reckless driving, drug abuse, and swimming and boating accidents. (Abstract truncated at 400 words). Author-abstract. 102 Refs.

2

AN 88092386. 88000.

AU Adeyanju-M. Creswell-W-H Jr.

IN Health Education, University of Kansas, Lawrence 66045.

TI The relationship among attitudes, behaviors, and biomedical measures of adolescents "at risk" for cardiovascular disease.

SO J-Sch-Health. 1987 Oct. 57(8). P 326-31.

LG EN.

AB This study monitored trends in health behavior and attitudes of 93 adolescents who, according to clinical measures, were classified "at risk" for cardiovascular disease and determined the relationship among their health status, behavior, and attitude over a four-year period. Data collected included biomedical measures and self-reported health behaviors and attitudes. A greater proportion of "at risk" students reported negative health behavior changes in smoking, diet, alcohol, and stress. However, a positive health behavior trend was noted with respect to smokeless tobacco use declining from a high of 14% as freshmen to 8% as seniors. Also, students appeared sensitive to the potentially harmful effects of smoking. In general, a positive relationship existed among health status, health attitudes, and behavior. The findings justify screening to identify students "at risk" and beginning early intervention to prevent chronic disease in later life. Author-abstract.

3

AN 86289595. 86000.

AU Gottlieb-N-H. Baker-J-A.

IN Department of Physical and Health Education, University of Texas, Austin 78712.

TI The relative influence of health beliefs, parental and peer behaviors and exercise program participation on smoking, alcohol use and physical activity.

SO Soc-Sci-Med. 1986. 22(9). P 915-27.

LG EN.

AB This research specifies a model for lifestyle health behavior which includes socialization, social environmental and cognitive influences on smoking, alcohol use and exercise. Survey respondents were participants in university conditioning classes, academic health classes and a community fitness program. Of the socialization influences, drinking by both parents was directly related to drinking by females and drinking by the mother to that of males. Physical activity level of the father was associated with the activity of both genders. Parental smoking was not related to that of the respondents. Income was positively correlated with alcohol consumption in both genders and with smoking among women. In the immediate environment, drinking and smoking by male and female friends were directly associated with that of both male and female respondents with congruent gender relationships being strongest. Exercise by male friends was positively associated with activity level for both genders, as was exercise by female friends for women only. For college students, program participation was related to lower alcohol consumption among men only and higher activity level for women only. It was not related to the likelihood of smoking. For cognitive factors, belief in the efficacy of lifestyle change was inversely related to alcohol consumption for both genders and to smoking for women. Susceptibility to heart disease was associated with a low exercise frequency and smoking, while generalized susceptibility was directly related to activity level and to smoking. Self control over health was positively related to activity level. With one exception, the peer modeling variables had the strongest relationships of any of the model elements in the multivariate analyses. Gender specificity for modeling of behavior was found for peers, but not for parents. These findings suggest that prevention programs incorporate strategies to maximize peer support for healthful behavior and to counteract the effects of unhealthful behavior modeled by peers. Interventions to increase beliefs in the efficacy of lifestyle change to reduce risk are appropriate to encourage behavior change. When the change is underway, discussion of lowered susceptibility as a function of program compliance should reinforce the new behavior. Author-abstract.

4

AN 87203241. 87000.

AU Perry-C-L. Silvis-G-L.

IN Division of Epidemiology, School of Public Health, University of Minnesota, Minneapolis.

TI Smoking prevention: behavioral prescriptions for the pediatrician.

SO Pediatrics. 1987 May. 79(5). P 790-9.

LG EN.

AB Pediatricians are important instigators of behavior change for the promotion of nonsmoking. Smoking is harmful to infants, children, and adolescents, and evidence is reviewed that passive smoking can have potent deleterious effects. Interventions with young adolescents based on social-psychologic theory have shown promise in changing smoking behavior and reducing smoking onset rates. Interventions are described, based on epidemiologic and etiologic data, that are appropriate for infants, children, adolescents, and parents. Interventions for parents should encourage cessation and the creation of a smoke-free environment for children. Interventions for children should emphasize the negative health effects of smoking and help them build an armamentarium against factors that promote experimentation with smoking. Interventions for adolescents should encourage them to remain nonsmokers in an environment of social pressure to smoke. The rationale for these strategies and methods of implementation in the pediatrician's office are described. Author-abstract.

5

AN 86138775. 86000.

AU Winfree-L-T Jr. Griffiths-C-T.

IN Department of Criminal Justice, Louisiana State University, Baton Rouge 70803.

TI Trends in drug orientations and behavior: changes in a rural community, 1975-1982.

SO Int-J-Addict. 1985 Oct. 20(10). P 1495-508.

LG EN.

AB This paper examines trends in rural American rates of marijuana use and drug-related orientations over an 8-year period. The younger rural youths (13-year-olds) in our three surveys (1975, 1979, and 1982) reported significant declines in rates of use and expressed a general trend toward conservatism. The attitudes and orientations of older youths (16-year-olds) changed also, and in the same directions, but those changes were not statistically significant. Use rates for 16-year-olds, on the other hand, increased, but again the changes were not statistically significant. In at least one cohort we studied, attitudes changed prior to shifts in behavior. We also observed that the predictive ability of the selected attitudes and orientations increased considerably from 1975 to 1982. In the midst of a movement toward conservatism on drug issues, liberalness was even more closely linked to marijuana use than in the previous decade. Lastly, we evaluate the implications of these findings for drug prevention policy and future research. Author-abstract.

Psychological Abstracts Database Search

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1

AN 36747 75-12. 8812.
AU Martin-Jean-F. Michaud-Pierre-Andre.
IN Faculty of Medicine & Public Health Service, Lausanne, Switzerland.
TI AIDS Education in Switzerland: implementing strategies to reach groups with high risk behaviours, particularly youth. Special issue: AIDS.
SO Health Education Research. 1988 Apr vol 3(1) 105-112.
AB Describes the implementation of federal acquired immune deficiency syndrome (AIDS) care and prevention policies in the Swiss canton of Vaud. Efforts among 16-19 yr olds and groups at risk for AIDS, such as homosexuals and IV drug-users, to translate AIDS prevention messages into behavioral changes are discussed. (PSYCINFO database copyright 1988 American Psychological Assn, all rights reserved).

2

AN 57092 24-12. 8712. DBO.
AU Neiweem-Bernard-M.
IN Northern Illinois U.
TI Change and the therapeutic process: a naturalistic study of the resolution of chronic non-attendance in adolescents.
SO Dissertation Abstracts International. 1987 Jan vol 47(7-a) 2459-2460.

3

AN 00881 72-1. 8501.
AU Stolberg-Arnold-L. Anker-James-M.
IN Virginia Commonwealth U.
TI Cognitive and behavioral changes in children resulting from parental divorce and consequent environmental changes.
SO Journal of Divorce. 1983 Win vol 7(2) 23-41.
AB Used the Child Behavior Checklist and measures of recent life changes, environmental changes, and the semantic differential to determine cognitive and behavior changes in 39 6-16 yr old children of divorced parents compared to 40 age- and SES-matched children living with both parents. Results show that changes in cognition and/or perception and behavior occurred in Ss following divorce; the extent of change varied with the extent of environmental change. A linear relationship was found between s's age at divorce and the extent of cognitive and/or perceptual and behavioral change. Ss whose father initiated the divorce showed significantly higher prosocial interpersonal skills than did Ss whose mother initiated the divorce or whose parents made a mutual decision to end the marriage. Child psychopathology was associated with types of changes, changes in parent-child relations, and increased demands on the custodial parent. It is suggested that intervention programs focus on environmental changes in the child's situation. (25 Ref).

4

AN 53528 21-7. 8407. DBO.
AU Varcoe-Marilyn-J.
IN Pennsylvania State U.
TI A cognitive coping skills program for the training of disruptive adolescents.
SO Dissertation Abstracts International. 1984 Feb vol 44(8-b) 2543.

5

AN 20454 76-6. 8906.
AU Burnett-Kent-F. Magel-Patricia-E. Harrington-Susan. Taylor-C-Barr.
IN U Wisconsin, School of Education, Madison, WI
TI Computer-assisted behavioral health counseling for high school students.
SO Journal of Counseling Psychology. 1989 Jan vol 36(1) 63-67
AB Computer-assisted behavioral health counseling for high school students (n = 45) was compared with an educational intervention in which health tip sheets were distributed (n = 17) and with an assessment-only condition (n = 15). In addition, overweight subjects in the computer-assisted counseling condition received computer-generated feedback designed to encourage weight reduction. At the conclusion of the 12-week study period, subjects in the computer-assisted counseling condition reported significant reductions in saturated fat and cholesterol consumption and significant increases in fiber and complex carbohydrate consumption. Subjects in the two control conditions also reported dietary improvement but to a lesser degree. Overweight subjects in the computer-assisted counseling condition lost a mean of 6.5 lb compared with a mean weight loss of 1.25 lb for the assessment-only subjects and mean

weight gain of 2.75 lb for subjects in the health tips conditions. (PSYCINFO database copyright 1989 American Psychological Assn, all rights reserved).

6
AN 22175 73-9. 8600.
AU Mulvey-Edward-P. Larosa-John-F.
IN U Pittsburgh School of Medicine, Western Psychiatric Inst & Clinic.
TI Delinquency cessation and adolescent development: preliminary data.
SO American Journal of Orthopsychiatry. 1986 Apr vol 56(2) 212-224.
AB Investigated, retrospectively, 10 15-20 yr old white males who were identified by 2 directors of community-based youth services as having improved markedly within the past 2 yrs (i.e., ceased delinquent activity and stabilized in their personal lives). Ss had been arrested 1-17 times and had been "recovered" from 1 mo to 2 yrs. Ss participated in a semistructured interview; completed measures of delinquency, drug use, and social networks; and provided information on activities and associations both since cessation of delinquent activities and in the year prior to cessation. Findings provide a preliminary description of the content and process of the cessation of delinquency; consistent themes included the suggestion that cessation occurs as part of a broader behavioral change and the report that cognitive change was a precursor of behavioral change. Content changes cited included decline in drug use often associated with a change in social networks and improved family relationships. Process changes involved identification of a time period (usually beginning with a particular event or life change) and support from significant others. (48 Ref).

7
AN 52107 22-4. DBO
AU King-Karen-K.
IN Texas Woman's U.
TI The effect of the Fitnessgram on parents' opinion, knowledge, and behavior regarding their child's physical fitness.
SO Dissertation Abstracts International. 1984 Nov vol 45(5-a) 1305.

8
AN 53274 20-3. 8309. DBO.
AU Williams-Raymond-E.
IN Washington State U.
TI Elements of persuasion: an analysis of the effects of communicator credibility, fear appeal of the message, and channel of communication upon cognitive and behavior change.
SO Dissertation Abstracts International. 1983 Mar vol 43(9-b) 3078.

9
AN 08644 70-4. 8310.
AU Burdsal-Charles. Force-Ronald-C.
IN Wichita State U.
TI An examination of counselor ratings of behavior problem youth in an early stage, community-based intervention program.
SO Journal of Clinical Psychology. 1983 May vol 39(3) 353-360.
AB Explored counselor ratings of 99 male and 33 female 10-13 yr olds in the first and last of 3 15-day therapeutic camping trips. Counselors rated Ss on a 25-item, 6-point Likert scale. Examined were any perceived changes that occurred in the boys or girls according to the 6 factors extracted from the rating data: group interferer, unstructured dependence, disliked but trying, outright offender, mutual leadership, and institutional adaptability. Results indicate a significant difference between boys and girls from 3rd-trip comparisons on unstructured dependence. Only the boys showed significant differences between the 1st and 3rd trips. Reliable counselor ratings were found, and boys were perceived by the counselors to change, while girls were not. (9 Ref).

10
AN 32719 71-12. 8412.
AU Feldman-Robert-H.
IN U Maryland, College Park.
TI The influence of communicator characteristics on the nutrition attitudes and behavior of high school students.
SO Journal of School Health. 1984 Apr vol 54(4) 149-151.
AB Assessed the effect of communicator characteristics on nutrition education communication in 284 10th-12th grade students. In phase 1, 127 Ss completed an 80-item questionnaire that examined snack and dessert preferences. Based on these results, a communication message concerning nutritious snacks was developed; 46 Ss were given a list of similarity characteristics to rate in reference to themselves, and 36 Ss were asked to rate occupations in terms of nutrition expertise. In phase 2, 157 Ss in the 2nd group were randomly assigned to 1 of 4 groups; each group was given the nutrition message labeled as coming from a high-, medium-, or low-similar source and from a high-, medium-, or low-level of expertise. Results show that the greater the perceived similarity, the greater the influence on the

nutrition behavior and attitudes of ss. The communicator perceived to be both low in similarity and high in expertise was the least influential communicator. It is concluded that it is important for school health educators to determine students' perceptions of similarity and expertise to improve the effectiveness of communication. (14 Ref).

11

AN 00915 73-1. 8601.

AU Leduc-Aimee.

IN U Laval, Faculte des Sciences de L'education, Quebec, Canada.

TI L'influence de la pensee sur l'attitude et le comportement selon le paradigme du behaviorisme social. (The influence of thought on attitudes and behavior according to the social behavior paradigm.).

SO Apprentissage et Socialisation. 1984 Dec vol 7(4) 241-248.

AB Examines attitude change among high school students from the perspective of social behaviorist theory. Different conceptualizations of death, mental illness, intelligence, and their effects on behavior are presented. Relationships among thought, attitude, and behavior are discussed. (English abstract) (5 ref).

12

AN 26163 74-9. 8709.

AU Brown-Leonard-N.

IN Rutgers U School of Social Work, New Brunswick.

TI Mobilizing community services for adolescents in trouble.

SO Social Work with Groups. 1986 Spr vol 9(1) 107-119.

AB Considers the low self-image and self-defeating behavior of many adolescents who are experiencing social, educational, and emotional problems and suggests that helping efforts should be initiated from a wellness perspective. Social agencies often create barriers to troubled adolescents through their administrative structure and emphasis on pathology. Through the collaboration of a family service agency and public recreation department, an outreach program is described that makes use of recreational activity as an entry point for a range of social, educational, and mental health services. The use of community agencies and involvement of the adolescents and their parents in setting goals are vital parts of this integrative approach. (PSYCINFO database copyright 1987 American Psychological Assn, all rights reserved).

13

AN 26264 74-9.8709.

AU Dromi-Paula-G. Krampf-Zvika.

IN U Southern California, School of Social Work, Los Angeles.

TI Programming revisited: the Miftan experience.

SO Social Work with Groups. 1986 Spr vol 9(1) 91-105.

AB Describes the use of structured board games as the sole program activity for a small group of maladaptive Israeli adolescent boys in attendance at a socio-educational community center. The extensive use of groups by staff necessitated intensive pregroup planning that included consideration of the setting, the social worker's role, the abilities of potential group members, and the classification and selection of games. The group met for 10 wks with the social worker actively participating in the games. Positive changes were reported, and both emotional growth and behavior change were visible to the boys and the staff. (PSYCINFO database copyright 1987 American Psychological Assn, all rights reserved).

14

AN 52751 23-6. 8606. DBO.

AU Keogh-Rosemary-J.

IN U Toronto, Canada.

TI Self-efficacy: underlying mechanism of behaviour change and determinant of coping behaviour.

SO Dissertation Abstracts International. 1985 Nov vol 46(5-b) 1743.

15

AN 14027 74-5. 8705.

AU Leach-David-J. Byrne-Mitchell-K.

IN Murdoch U School of Social Inquiry, Psychology Section, Perth, Australia.

TI Some "spill-over" effects of a home-based reinforcement programme in a secondary school.

SO Educational Psychology. 1986 vol 6(3) 265-276.

AB Examined a home-based reinforcement (h-br) program that was carried out in a secondary school to increase rule-following and work completed by 2 classes of disruptive students (aged 13-14 yrs). Attention was focused on whether the positive effects of the program on target students would "spill-over" to equally disruptive control students in the same classes. Results show significant improvements in the work and behavior of both sets of target ss, but positive spill-over effects on controls were only apparent in 1 of the classes. It is concluded that the value of h-br programs in secondary schools as minimal intervention techniques would be enhanced if spill-over effects on nontargeted classroom subgroups could be planned for rather than hoped for. (22 Ref) (PSYCINFO database copyright 1987 American Psychological Assn, all rights reserved).

16
AN 55551 24-11. 8711. DBO.
AU La-Terz-Jean-D.
IN Northeastern U.
TI A statistical analysis of student behavior change in a public school for severe special needs adolescents based upon the effects of a behavior management system.
SO Dissertation Abstracts International. 1986 Nov vol 47(5-a) 1661.

17
AN 06980 74-3. 8703.
AU Winfree-L-Thomas. Griffiths-Curt-T.
IN Louisiana State U, Baton Rouge.
TI Trends in drug orientations and behavior changes in a rural community, 1975-1982.
SO International Journal of the Addictions. 1985 Oct vol 20(10) 1495-1508.
AB Examined trends in rural American rates of marihuana use and drug-related orientations over an 8-yr period among 237 13-yr-old and 207 16-yr-old youths in a rural mountain community. Data were analyzed from 3 surveys of school-age children conducted in 1975, 1979, and 1982. Findings indicate that younger Ss reported significant declines in rates of use and expressed a general trend toward conservatism. Although attitudes and orientations of older Ss also changed in the same directions, their changes were not statistically significant. Use rates for 16-yr-olds increased but were statistically insignificant. In at least 1 cohort studied, attitudes changed prior to shifts in behavior. The predictive ability of the selected attitudes and orientation was observed to increase considerably from 1975 to 1982. In the midst of a movement toward conservatism on drug issues, liberalness was even more closely linked to marihuana use in 1982 than in the previous decade. (38 Ref) (PSYCINFO database copyright 1987 American Psychological Assn, all rights reserved).

Sociological Abstracts Database

1

AN 79K2117. 0000.

AU Baranowski-Marc-D.

IN Central Michigan U, Mt Pleasant 48859.

TI Adolescents' Attempted Influence on Parental Behaviors.

SO Adolescence. 1978, 13, 52, Winter, 585-604.

AB The extent to which adolescents attempt to influence the everyday behaviors of their parents is examined & discussed. Variables such as social class, parental authority style, & personality characteristics of parent & child are discussed in terms of their impact on the type of parental behaviors adolescents may try to influence. Questionnaires given to 84 adolescents & their parents asked which of 31 parental behaviors had been targets of adolescent influence & whether or not the influence had resulted in parental behavior change. Results indicate significant positive correlation between attempted influence & adolescent need for autonomy & significant negative correlation between attempted influence & father's need for dominance. Mothers more than fathers were the targets of attempted influence, & adolescents perceived more attempted influence on more behaviors than did parents. Males were not found to attempt influence in more areas of behavior than females. Areas of behavior perhaps more open to adolescent influence are discussed. 4 Tables. Modified HA. (Reprinted with Permission of Sociological Abstracts, Inc. All Rights Reserved.)

2

AN 75H3272. 0000.

AU Braukmann-Curtis-J; Fixsen-Dean-L; Phillips-Elery-L; Wolf-Montrose-M; Maloey-Dennis-M.

IN U Kansas, Lawrence 66044 & Bringing It all Home Project, Morgantown NC.

TI An Analysis of a Selection Interview Training Package for Predelinquents at Achievement Place.

SO Criminal Justice and Behavior. 1974, 1, 1, Mar, 30-42.

AB 6 boys aged 12 to 16 years from a small, family-style behavior modification program for adolescents with behavior problems, volunteered to participate in research concerning the effectiveness of a training package—a set of specific materials & procedures—developed to teach important interview skills. 3 separate experiments were set up for comparison. Conclusions are: (1) The training package is effective, at least in combination with the opportunity to earn money. (2) Each portion of the program is effective in producing the desired behavior changes, with the possible exception of the portion designed to train volunteering of information (the other measures were social behaviors, personal appearance, posture, & eye contact). The behaviors seem to be independent, except perhaps posture & eye contact. (3) The training package can seemingly be administered as effectively by naive trainers as by the experimenters themselves. The package was, then, effective & simple to administer. 5 Figures. S. Coler. (Reprinted with Permission of Sociological Abstracts, Inc. All Rights Reserved.)

3

AN 8400 393. 0000.

AU Shamsie-S-Jalal.

IN Thistletown Regional Centre, 51 Panorama Ct Rexdale Ontario M9V 4L8.

TI Antisocial Adolescents: Our Treatments Do Not Work-Where Do We Go from Here?.

SO Canadian Journal of Psychiatry/Revue Canadienne de Psychiatrie. 1981, 26, 5, Aug, 357-364.

AB The dramatic increase in antisocial adolescent behavior is reflected in statistics on juvenile crime in Canada, the United States, & the United Kingdom. A review of relevant evaluative studies on conventional treatment is presented, including studies involving case work, individual psychotherapy, behavior modification, group counseling, family therapy, milieu therapy, & therapeutic community. Findings indicate that, in general, these treatments are inadequate for the rehabilitation needs of adolescents with conduct disorders. The possibility that antisocial behavior is a sickness rather than a lack of socialization is discussed. Social learning theory as a means of teaching social norms is investigated. Success has been achieved with antisocial youngsters in a behavioral-employment intervention program. Evaluative studies have had a minimal effect on clinical practice. 1 Table, 39 References. S. Karganovic. (Reprinted with Permission of Sociological Abstracts, Inc. All Rights Reserved.)

4

AN 8507584. 8506.

AU Copeland-E-Thomas-Jr.

IN Medical Center U Kansas, Lawrence 66045.

TI A Cognitive-Behavioral Approach to the Group Treatment of Adolescents.

SO Small Group Behavior. 1984, 15, 3, Aug, 398-403.

AB Characteristics of a cognitive-behavioral mode of treatment for adolescent groups are described. Stages of treatment are identified, including identification of problems, establishment of treatment goals, & application of clinical or educative techniques; strategies for group leaders or therapists are outlined. Advantages to cognitive-behavioral group functioning are that behavioral goals are systematically established, progress toward behavior change can be charted, & awareness of individual improvement is reinforced in the group setting. 19 References. D. Dunseath. (Reprinted with Permission of Sociological Abstracts, Inc. All Rights Reserved.)

5

AN 79S10950. 0000.

AU Craft-Michael; Croucher-Ray.

IN Cambridge U Addenbrooke's Hospital, CB2 1QE England.

TI The Ecological Fallacy: Implications for Preventive Dental Motivation amongst Adolescents.

AS Society for the Study of Social Problems (SSSP). 1979. 1146.

AB The development & testing of the Natural Nashers' program for adolescents is described. It was hypothesized that plaque deposits & gingival inflammation could be reduced by an activity oriented, school-based program integrated into the Third Year Biology (Grade 8) curriculum & delivered by teachers, aided by part-time fieldworkers. Natural Nashers' presented a simple message: the daily, effective removal of plaque, & the choice of safe snacks. It concentrated on the distinction between prevention & cure; between whole healthy & diseased disabled teeth & between the frequency rather than the amount of sugar intake. The program was tested with 385 subjects in 6 urban coeducational school settings using a pre/post nonequivalent control group design & evaluated through the use of teacher administered knowledge & attitude multiple-choice questionnaires; plaque & gingival scores collected by a team of auxiliaries & recorders. The team worked blind to a standard schedule. Very large increases in knowledge & favorable attitudes were recorded along with significant improvements in plaque & gingival scores. No changes were found in the two control schools. A major finding was the emergence of a bias in intraoral plaque deposits & also in efficiency of its removal. Reliance upon mean data therefore fails to appreciate important internal variations within a group. Thus the ecological fallacy, previously unrecognized in preventive health research, may constitute an important barrier to progress in motivation, (such as dental health education) & suggests one reason why simple exhortations to increased brushing may fail. These results may however be dependent upon giving sufficient recognition to targeting the program, using a relevant message & appropriate media, & anticipating the ecological fallacy. (Reprinted with Permission of Sociological Abstracts, Inc. All Rights Reserved.)